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THE KASKINAMPO INDIANS AND THEIR NEIGHBORS[1]

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THE ethnologic condition of the Tennessee and Cumberland valleys during early colonial times has hitherto been involved in great obscurity on account of the few authentic references to the region and the unreliability of the maps of the period. The extreme southward swing of Tennessee river seems to have disturbed the mental balance of cartographers to such an extent that close study is required to determine whether a tribe or town was on the Tennessee, the Cumberland, or some other stream. Distortions of all kinds are met with, so that we find the Tennessee running straight west or southwest for its entire course and the relations of this river and the Cumberland to each other and to the Ohio and the Mississippi change in the most bewildering manner.

In another place[2] I have endeavored to resolve some of the confusion regarding the identity of the Tennessee tribes, but I was obliged to leave two of them, the Tali and Kaskinampo, unclassified, though I presented evidence that the former may have been the Tellico or Tahlequah (Tălikwă') band of Cherokee. For the Kaskinampo there seemed to be no clue whatever.

A recent reexamination of the whole question has, however, dissipated some of the uncertainty regarding the latter and appears to have resulted in an identification of the group to which it is to be assigned, even though the exact connection is still involved in some doubt. Our evidence is drawn first from maps and early narratives, and secondly from the name Kaskinampo itself.

Early maps of the Tennessee region fall into three principal classes, representing the results of as many distinct additions to the information of the cartographers. There are also minor variations within the classes,

[1] Published with the permission of the Smithsonian Institution.

[2] Bulletin 73, Bur. Amer. Ethn., Washington, 1922.

some of which may be accidental while others represent real or assumed advances in knowledge.

The name Kaskinampo goes back to the maps of Marquette and Joliet. On the Marquette map published by Shea it is spelled "Kakinonba" and is placed to the right of the lower Mississippi southeast of the "Cha8anon" (Shawnee) and north of the "Matahali."[3] In a map by Joliet, assigned conjecturally to the year 1690, it appears as "Kachkinouba," and is placed near a lake at the head of an eastern tributary of the Mississippi, probably intended for the Tennessee.[4] In Thevenot's map of 1681, prepared to illustrate Marquette's explorations, there is a list of tribal names near the right-hand margin and in the same latitude as the mouth of the Ohio, which stream is called "R. 8ab8quig8" (i.e., Wabash).[5] These tribes are, in the order given, the 8abanghiharea, Taharea, Kaskin8ba, and Matahale. The sizes of the tribes are indicated by subjoined circles, but only the last has more than one. These are assigned eighteen, from which it would seem that they are either the Cherokee or the Chickasaw, probably the former.[6] The name 8abanghiharea is Algonquian and signifies "easterners" or something of the sort but the identity of the tribe is unknown. The Taharea are probably the Tahogarewi, Tohogalewi, or Yuchi, and the Kaskin-8ba are of course the tribe in which we are principally interested.

What is supposed to be the earliest of the first series of maps to which I have just referred is a manuscript in the French archives and was prepared to illustrate the discoveries of La Salle, being placed conjecturally in the year 1682. A photostat copy of this map is in the Library of Congress, and from it the reproduction shown in figure 1 has been made. It is unsigned, but if the date is correct, it was either prepared by the cartographer Jean Baptiste Louis Franquelin or drawn upon extensively by Franquelin for his own charts. On it parts of the Mississippi, Ohio, and Tennessee are run together under the name "Fl. St. Louis ou Chucagoa, ou Casquinampogamou." The "Caschinampo" are placed on an island in Tennessee river, an island which is not shown unfortunately in the present reproduction, and from it a broken line extends to St. Augustine, Florida, with the legend "Ou les Caskinampo et les Chaoüenons vont en traite aux Espagnols." It is important to note the northern terminus of this trail, because in Franquelin's map of 1684, which has frequently been reproduced, the

[3] John G. Shea, Discovery and Exploration of the Mississippi Valley. Redfield, New York, 1852.

[4] MS. copy in the Library of Congress.

[5] 8=ou.

[6] See Charles A. Hanna, The Wilderness Trail, 2: 98.

"Caschinampo" village is omitted and the trail carried to a town called "Cisca" still farther north.[7] Since Cisca is evidently the same as Chisca or Chiska, which has been identified as a name of the Yuchi Indians, these later maps gave some color to the theory that the Kaskinampo were Yuchi, but this particular basis for the hypothesis is destroyed by the earlier and correct maps. On the headwaters of the Tennessee are three towns or tribes side by side, called in succession from west to east "Tehalaka," "Cacougai," and "Taligui." The first is, of course, intended for "Tchalaka,"

FIG. 1. An anonymous French map illustrating the discoveries of La Salle and conjecturally dated in the year 1682.

i.e., Cherokee. The second appears on other maps as "Cattougai," or "Catougai," and is evidently, as Hanna points out, intended for Katowagi, the Shawnee name for the Cherokee. This was derived originally from a large Cherokee town known as KItu'hwă situated "upon Tuckasegee River, and extending from above the junction of Oconaluftee down nearly to the present Bryson City, in Swain County, North Carolina."[8] Mooney, who gives us this information, adds that the name of the town was first extended

[7] Charles A. Hanna, The Wilderness Trail, 2: 92.

[8] James Mooney, Myths of the Cherokee. Ann. Rept., Bur. Am. Ethn, 19: 525.

to the subordinate settlements on Tuckasegee river and later to the entire nation. Taligui I believe to be identical with Tălikwă′, Tellico, or Tahlequah, one of the most important towns or sets of towns among the Cherokee. It is this name which has probably furnished the "Talligewi" or "Alligewi" of Delaware tradition, and this incidentally confirms Brinton's identification of the Talligewi with the Cherokee.[9] The fact that Kĭtu′hwă and Tălikwă′ were once applied to sections of the Cherokee leads to the suggestion that the name Cherokee may once have had a limited application as well, as appears on the map under consideration. Regarding the other maps of the series we need only remark that the legend on the trade route to St.

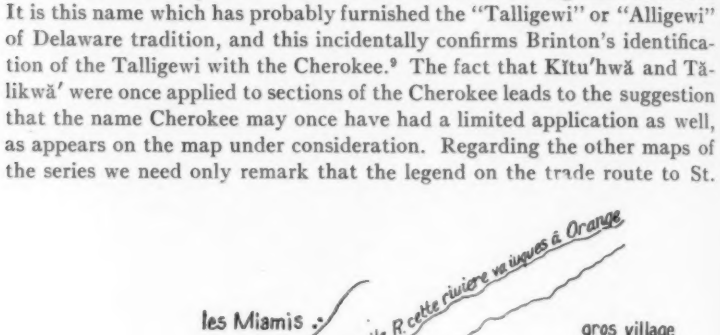

FIG. 2. The Vermale map of 1717.

Augustine on the Franquelin map of 1688 reads as follows: "Chemin par ou les Kaskinampos et autres sauvages vont traitter aux Espagnols."[10]

The second series of maps will particularly concern us but let us first briefly consider the third. The earliest of this group is a manuscript map by Vermale dated 1717 (fig. 2).[11] It shows little on the middle and lower courses of the Tennessee, but on its headwaters, besides two groups of towns called Cherokee specifically, there are four towns or tribes near-by with separate names. These are "Rongoria," "Ajouache," "Amochi," and "Talicouet." The first refers undoubtedly to the Tahogale or Yuchi

[9] D. G. Brinton, The Lenapé and their Legends, 229–231.
[10] Copy in Library of Congress.
[11] Ibid.

after they had occupied a town among the Cherokee which the latter called Tsistu'yĭ, "Frog Town," corrupted by the English into Chestua. Ajouache, which later maps give as "Aiouache," is Hiwassee (Cherokee Ayuhwa'sĭ), on Hiwassee river. Amochi is more often spelled Amobi or Amohi and is evidently from the Cherokee word meaning "island" (ămăye'lĭ). This has a general application but there was a specific town of the name at an early period. It appears on the Popple map of 1733 as "Amoyee."[12] Talicouet is plainly Great Tellico (Tălikwă'). The positions of all these towns correspond roughly with their locations in later times so far as these are known. The semi-independent character of Tellico is again emphasized.

The earliest of the second set of maps, on which we will now concentrate our attention, is De l'Isle's manuscript map of 1701.[13] From the legend along Tennessee river, "Route que les Francois tiennent pour se rendre a la Carolinne," it is evident that part of the data entering into it was furnished by five Canadians who ascended that stream in the summer of 1701 and reached South Carolina by way of the Cherokee country. Their achievement is announced in a letter dated August 4, 1701, written by Sauvolle at the newly established fort of Biloxi, which he commanded during the absence of his brother Iberville in France. An exact copy of the section of this in which we are interested is as follows:

Le premier vilage quils ont trouvé est Chicacha, qui est à droite en montant, environ à 140 L. du Miciscipi ensorte l'on rencontre les Tougalé, qui sont environ 200 hommes, fort bien faits, apres ça les Talé ou il y a un Anglois etably pour trafiquer des esclaves, comme ils font ches plusieurs autres nations. Les Cassoty et les Casquinonpa, sont sur une isle que forme la R. aux deux extremités de laquelle sont scituées ces deux nations. ils ont passé ansi au Cheraqué qui sont voisins de la R. des Chaüanon.[14]

When we come to compare De l'Isle's cartography of the Tennessee with this narrative we find a close resemblance, as we should expect, yet some puzzling divergencies. He gives us the "petit village des Chicachas" farthest down stream and seemingly on both sides. Next we come to a "village des Taogaria" opposite the lower end of an island upon which is the "village des Tali," above this a second island with two towns, the lower unmarked, the second with the legend "les Caskighi." The islands themselves are called "Isles des Caskinampo." Higher still are "villages des Chaouenons." In 1702 De l'Isle prepared another map which was in

[12] See reproduction in Bur. Am. Ethn., Bull. 73, pl. 4. The form Amobi must be erroneous, there being no b in Cherokee.

[13] Copy in Library of Congress.

[14] MS. in French Archives; copy in collections of Louisiana Historical Society.

most particulars a repetition of that of 1701. On this, however, the first island village is called "village des Caskinampo," and at the head of the river appears the "Nation des Tarachis," by which is evidently intended the Cherokee.[15] In the accompanying reproduction of the Tennessee section of this map (fig. 3) the relative positions of the towns are correctly given but the insular locations of Tali, Caskinampo, and Caskighi have not been preserved.

But while De l'Isle's map agrees in most particulars with the report contained in Sauvolle's letter there are differences which indicate some other

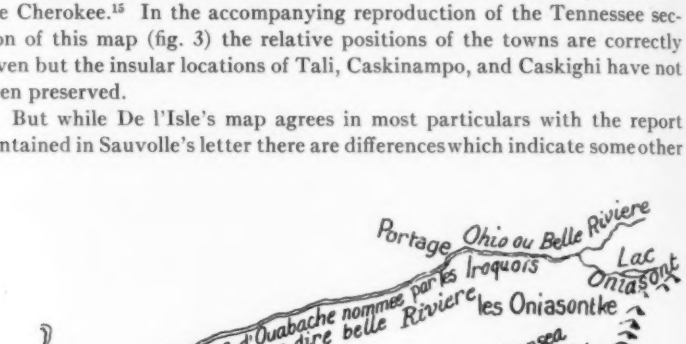

FIG. 3. The De l'Isle map of 1702.

source of information. Divergencies in spelling will be noted, but the most important alteration is in the name of the town at the upper end of the uppermost island. Instead of "Cassoty" as we might expect, we have "Caskighi." The appearance of Shawnee villages higher up the river might have been based on the report of the Canadians to the effect that the Cherokee "sont voisins de la R. des Chaüanon." But where did De l'Isle get the name "Caskighi"? It would seem that there must be some documents not yet available to students which contain the missing information. Most later maps until 1717, and some after that date, are but repetitions of these

[15] Copy in Library of Congress.

maps of De l'Isle, though some of them omit the Caskighi or Caskigui, and a few give a second Kaskinampo town lower down the river.

There are two early sources of information which disagree with the above, but both probably date from a period earlier than 1701 and may incorporate conjectures and rumors rather than the results of exploration. One is a manuscript French map of 1697[16] (fig. 4). Here the Tennessee appears as the "R. des Tasquinapous." On the south side of it pretty well down is "V. des Cochati," above on the north side in succession "V. des Tasquinap8s," and "V. des Taly," and on the south side, still higher up, the "V. des Togales." The other information is contained in the "Carolana" of Daniel Coxe Jr., published in 1705, but incorporating, in part at least, earlier information obtained by the elder Coxe.[17] According to his text the "Kasqui" were a short distance above the mouth of the Tennessee, the "Chicazas" about 200 miles higher, below "a small fall or cataract," and 30 to 40 leagues higher still were "four delicate islands" upon which lived the "Tahogale," "Kakigue," "Cochali," and "Tali," supposedly in that order as one ascended the river. Sixty leagues beyond were the Cherokee.

These two sources testify to the presence of the same tribes on the river, except that the French map does not give the Caskigui, who are, without much doubt, the "Kakigue" of Coxe. The points to be noted are that the Cherokee, Shawnee, Yuchi (Tahogale, Taogaria, etc.), and Tali are kept distinct from the rest, thus tending further to dispose of the theory that the Kaskinampo were Yuchi, which at one time seemed to the writer a plausible supposition and indicating that they were distinct from the Cherokee or Shawnee.

It is clear that the Cassoty, Cochati, and Cochali are the Koasati of later history, most of whom settled among the Creek in the seventeenth century, near the junction of Coosa and Tallapoosa rivers. A few remained upon Tennessee river at the present Larkin's Landing until a comparatively late date. It seems almost equally certain that the Caskigui were the Taskigi or Tuskegee. Either owing to miscopying or to a dialectic shift, capital T and capital K are often used interchangeably. Those Tuskegee who settled among the Creek probably broke away before the opening of the eighteenth century since we find them on the lower Chattahoochee by 1685, but another section of the tribe remained on or near Tennessee river and finally joined the Cherokee.[18]

[16] Copy in Library of Congress.

[17] A Description of the English Province of Carolana (in French, Hist. Colls. of Louisiana, Phila., 1850).

[18] James Mooney, Myths of the Cherokee. Ann. Rept., Bur. Am. Ethn., 19: 534.

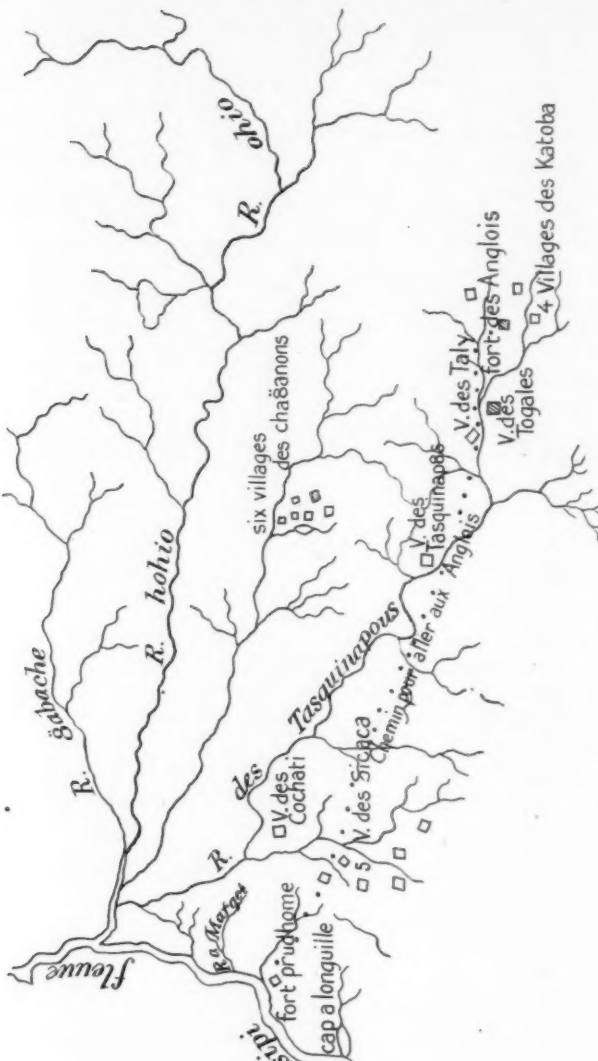

FIG. 4. An anonymous French map conjecturally dated in 1697.

This northern band of Tuskegee *might* have been the tribe earlier known as Kaskinampo, but there are certain serious objections to such an identification. If the name Kaskinampo were the one to disappear when that of Kaskigui or Taskigui appears, the identity of the two tribes would seem assured, but instead it is "Koasati" or its equivalent which thus drops out of sight, and we *know* that the Koasati and Tuskegee were distinct tribes. It is possible that the Koasati and Tuskegee tribes spoke languages so nearly related that the names became shifted from one to the other, and I believe the first part of this supposition is correct. I do not believe, however, that Kaskinampo was properly a name for the tribe known later as Tuskegee because, had it been, it would probably have alternated in use with the name of the Tuskegee. Moreover, as we shall see presently, De Soto seems to have encountered all three of these tribes at as many separate points.

My own conclusion from the above facts is that the Tuskegee, Kaskinampo, and Koasati were related tribes but that the two last mentioned finally united into one body. On a map prepared in the interest of the South Carolina colony about 1716–18, that upon which was based Moll's map of 1720, Tennessee river is called in two places "Cusatees River," and in a third place "Thegalego River," the latter name evidently a corruption or shortening of Tohogalega, a form of the name for the Yuchi which also appears.[19] These "Tohogalegas" are located, as on most of the other maps of the time, just below the great bend in the Tennessee. Immediately above that bend is an island called "Cusatees Id." which we may identify with little difficulty as Pine island. In the middle of this a French fort is indicated with the note that it had been established there "since ye warr," i.e., the Yamasee war. On either side of the fort is a native village to which the legend is attached "Cusatees 50 in 2 villages," the 50 evidently referring to the number of warriors. There is no good reason to doubt that these villages are the two visited by the Canadians in 1701, fifteen years before. If we could be sure of this, it would be evident that they represent the villages of the "Casquinonpa" and "Cassoty." At a somewhat later date James Adair enumerates among the tribes taken in by the Creek to swell their federated body "two great towns of the Koo-a-sah-te." Later he mentions "two warlike towns" of this tribe as having moved to the Tombigbee "soon after West-Florida was ceded to Great Britain." However, some probably remained on the Tennessee since we hear of a "Coosada" town at Larkin's Landing in Jackson county in 1784, said to be a mixed settlement of Creek and Cherokee. At a somewhat later date Koasati

[19] Bur. Am. Ethn., Bull. 73, pl. 3.

moved over into Louisiana where their descendants still live, while the rest of them followed the Creek to Oklahoma, and a few still retain the ancient Koasati speech. In Oklahoma there were also two ceremonial grounds of Koasati known as Koasati No. 1 and Koasati No. 2.[20] It is quite probable that the older tribal distinctions played a part in some of these later divisions, but of that we are not likely ever to be certain.

The seeming appearance of Tuskegee at the point where we should expect Koasati on De l'Isle's maps of 1701 and after is due, I believe, to the fact that the Tuskegee were living at the same period on another island higher up, probably Long island. It will be remembered that on De l'Isle's map are entered the "Isles des Caskinampo" and there are in fact two islands. These islands are represented actually close together it is true, while Pine and Long islands are something like sixty-five miles apart, but, as already indicated, we must not expect too much of the cartography of the period.

The above evidence is strengthened somewhat by linguistic considerations. "Kaskinampo" has a Muskhogean appearance but cannot be interpreted with certainty in any known Muskhogean tongue. It resembles Choctaw or Chickasaw rather than Creek, but no Choctaw words of similar aspect have a meaning such as might plausibly have been attached to a tribe. When we turn to Alabama and Koasati, however, we seem to get some encouragement as to the significance of the latter part of the word. It must be remembered that Coxe calls the tribe Kasqui, and that the Casqui or Casquin of De Soto's chroniclers is evidently the same. In my Koasati vocabulary anâmpō is given as a word meaning "the next time," or "the next one," but in my very much fuller Alabama dictionary nampo appears as the equivalent of "many." This may well have been used as a plural. Plausible interpretations may be suggested for the first part of the word, one in particular being supplied by the seeming use of kaska as "warrior" in place of Choctaw and Chickasaw tâshka. As Alabama and Koasati are closely related it is probable that further investigation will show that the Alabama usage of nampo is paralleled in the sister tongue. In the long form given by Franquelin, "Casquinampogamou," we may suppose that an article or postposition has been included.

The evidence thus brought together seems to indicate that the Kaskinampo were a tribe which spoke the Koasati language or a closely related dialect. While there is a possibility that it was the tribe later known as Tuskegee, I rather think that all three were independent but linguistically related peoples. We know that the Tuskegee spoke a language distinct from Creek. We do not know what this was, but the character of their

[20] See Bur. Am. Ethn., Bull. 73: 201–207.

own name which seems to contain the old Muskhogean word for "warrior," tåska or tåshka, and their constant association with the Koasati both on Tennessee river and in the Creek nation make its relationship to Koasati probable. Koasati is still spoken and it is known to be related most closely to Alabama while showing certain traces of Creek influence, just as Alabama does of influence from the Choctaw or Chickasaw.

When De Soto and his men descended the Tennessee in the early summer of 1540 he came to the province of Coste (Ranjel), Acoste or Coste (Elvas), Costehe (Biedma), or Acosta (Garcilasso de la Vega). This, as I have stated elsewhere, I believe to have been the Koasati of later writers, the only difficulty being the absence of a vowel between s and t.[21] The final -he of Biedma's form may be an attempt at the Koasati plural or collective ending -ha. Mr. Brame of the Alabama Anthropological Society has, I think, identified the site of this town quite conclusively with an aboriginal site at the upper end of Pine island.

Next, De Soto came to Tali close to the southernmost swing of Tennessee river and from there marched across country to Coosa on the river of the same name. About two-thirds of the way to the latter place he came upon a town called Tasqui. In 1567 a Spanish soldier and some Indians reported to Juan de Vandera, Spanish governor of Santa Elena, that they had visited this place and another near-by known as Tasquiqui. There can be no reasonable doubt that this last was a settlement of the historic Tuskegee Indians, and relatively little doubt that Tasqui appertained to them also.[22] It is safe to assume, therefore, that in 1540 part of the Tuskegee at least were between the Tennessee and the headwaters of the Coosa. That fission may have begun in Vandera's time, which sent one part south to live with the Creek and the other to Tennessee river and ultimately to the Cherokee country.

In March, 1541, a few days after De Soto's army crossed the Mississippi river, they came to the principal town of a province which Ranjel and Elvas call Casqui, Biedma Icasqui, and Garcilasso Casquin. The variant forms of this name indicate either that the people spoke a Muskhogean dialect or that the name was obtained through Muskhogean interpreters, or both. The i- of Icasqui would be the objective pronominal sign of the third person and the final -n of Casquin the sign of the indirect object, both of which are features common to all Muskhogean tongues except Natchez. It is likely that "Quarqui," given by Ranjel as the name of the province in which Casqui was situated, is a synonymous term, s having been miscopied r, and it has been suggested that Quizqui or Quiz-

[21] Bur. Am. Ethn., Bull. 73: 201.

[22] Bur. Am. Ethn., Bull. 73: 201–211.

quiz, which was on the east bank of the Mississippi opposite this province, may contain a variant of the word Casqui.[23]

In De Soto's time, Casqui and Pacaha were the most powerful tribes in the region and were at war. A word might be added regarding the second of these. Because Garcilasso calls this tribe Capaha, a rather close approximation to Ugákhpa, the native name of the Quapaw or Arkansas tribe, it has quite uniformly been supposed that the two were identical. But Garcilasso is the poorest of our informants and the arguments against such an identification are weighty. In the first place there is every evidence that the Quapaw Indians had moved down the Mississippi a very short time before Marquette and Joliet reached it (1673). According to the common tradition among the Indians they had formerly lived on the Ohio, and, in fact, that part of the stream above its junction with the Wabash was known as River of the Arkansas. It seems fairly plain that the sites of their former villages there were well known. Now, while the traditions regarding the general drift of a migrant people will be kept alive for a considerable period by tradition, I think it is unlikely that such clear knowledge of this movement would have been retained for a hundred and fifty years, as must be assumed if the Quapaw were on the lower Mississippi in 1541. Moreover, the reference to a temple among the Pacaha, and other facts mentioned by the Spaniards, do not agree very closely with what we know of the Quapaw.

There is also a bit of linguistic evidence. The Fidalgo of Elvas tells us that the chief of Pacaha gave De Soto two of his sisters to be his wives, one named Macanoche, the other Mochila.[24] It may be a mere coincidence, but at least the fact is interesting, that the two last syllables of the first of these names together closely resemble the Tunica word for "woman," nuhtci or nu'tci. In the same language maka is the word for "fat," or "grease," and mahka or ma'ka means "beloved," or "dear" though we cannot be sure that the latter word is used here because Tunica structure would make it necessary to place the noun first. The Tunica words most closely resembling Mochila are mucali (mushali), "a little hill or mound," and mutci, "bread." In the tribal name Pacaha the final -ha may be the Koasati plural above mentioned, but whether the rest of the word is from Koasati or the native tongue of the Pacaha people it is impossible to determine. However, the only points I wish to stress in these resemblances are: (1) that the phonetics conform to what we know of the phonetic sounds of Tunica; and (2) that the identity of -noche and Tunica nuhtci is inherently probable.

[23] Ibid., 213–214; Bourne, Narratives of De Soto, 1: 110–117; 2: 25–26, 137–140.

[24] E. G. Bourne, Narratives of De Soto, 1: 129.

Except for some light cast upon the Tennessee river region in consequence of the explorations of Juan Pardo and his associates in 1566 and 1567 we know nothing of the history of the tribes along this part of De Soto's route from the time his followers left the country until Marquette's voyage of 1673. By 1701, as we have seen, the Kaskinampo, presumably De Soto's Casqui, had settled on an island in the Tennessee, but a French description of the province of Louisiana, dated about 1712, states that they had formerly dwelt upon the Cumberland which was therefore called after them the River of the "Caskinanpau." We must suppose, then, that between 1542 and 1701 the Kaskinampo had moved some distance north to the Cumberland and then had returned to the more southern river. As Coxe implies, it is probable that they first settled toward the mouth of the latter stream but later moved to Pine island to join their relatives, the Koasati, whose fortunes they afterward followed.

Conclusions

There is good reason to believe that the Kaskinampo were a tribe linguistically related to the Koasati and that they ultimately united with them and disappeared from history by taking their name. It is practically certain that they are the Casqui encountered by De Soto shortly after his passage of the Mississippi river and that they subsequently moved to the Cumberland and then to the Tennessee, where they met the related tribe and fused with them. Although they were probably distinct from the Tuskegee, it is suggested that the first part of the names of these tribes, kaski and taski, are variants of the same word, which as tâshka in Choctaw and Chickasaw and tâsikaia in Creek is applied to a common warrior. A tâsikaia is a novitiate warrior and the term is often used as equivalent to "citizen." These words were probably employed as tribal names by several related peoples, perhaps some of those which anciently lived in eastern Arkansas and were responsible for part of the striking remains still existent there. The tribe in question we have actually traced to a former trans-Mississippi home in this section. But at least a part of the related Alabama, a tribe usually associated with the river so called, were found by De Soto in northwestern Mississippi, and they may have moved from the same region. The Tuskegee, part of whom finally settled at the junction of the Coosa and Tallapoosa rivers and part among the Cherokee, make their first appearance in history in northern Alabama, suggesting a movement from the same section. Perhaps these hints may help to guide future archaeological investigation in the Yazoo-Washita country. However, it is certain that the tribes of this group were not the only ones responsible for the Arkansas remains. I believe the Pacaha to have been a Tunican

tribe and may add that other tribal names of the section suggest the Tunica and Natchez languages.

The following tribes are known to have lived upon the middle and lower courses of Tennessee river:

1. A band of Chickasaw who were settled a few miles above the mouth of this river at the very end of the seventeenth century and the beginning of the eighteenth.

2. A band of Yuchi during the same period, located at or just above Muscle Shoals.

3. A band of Indians called Tali, probably part of the Cherokee, at the great bend, who occupied the country for over a hundred and fifty years.

4. The Kaskinampo, probably, as we have seen, relatives of the Koasati and occupants with them of Pine island for a few years at the opening of the eighteenth century.

5. The Koasati, on Tennessee river, presumably on Pine island, from 1540 until some date subsequent to 1715.

6. A band of Tuskegee, on or near Long island for a few years during the first half of the eighteenth century.

7. A band of Chiaha Indians, people seemingly connected in speech with the Hitchiti and Yamasee, and probably located on Burn's island, their incumbency in any case being known to extend from 1540 to 1567 and perhaps much longer.

Shawnee villages are placed on Tennessee river somewhat above any of the sites just mentioned on many early maps, but this may have been due to a confusion of the Tennessee and Cumberland rivers. The name of Savannah, county seat of Hardin county, Tennessee, suggests the presence of this tribe at a point much farther down and, even though they did not remain long upon this stream, they are known to have crossed it several times on their way to and from the Creek nation. At the best their occupancy was evanescent.

Let me add that for the identification of the locations of these towns we are peculiarly indebted to Mr. J. Y. Brame of the Alabama Anthropological Society, whose paper on "De Soto in Alabama, 1540" (*Arrow Points*, vol. 13, no. 3) marks an epoch in the determination of Indian sites in this section.

Explorations of the Tali and Koasati sites, if at all productive, should give us some definite knowledge of the culture of the prehistoric Koasati and the culture of a part of the Cherokee.

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SELECTIONS FROM THE LETTERS OF LORIMER FISON AND A. W. HOWITT TO LEWIS HENRY MORGAN (concluded)

EDITED BY
BERNHARD J. STERN

A. W. Howitt Sale, March 18, 1879

. . . .Fison has planned a future work which would cover the whole of the Australian field and also the Australasian island groups. I only trust it may get itself carried out but at present I don't see my way through the darkness. However, dawn may come. I think that I shall probably enlist the Victorian government. . . . .

Lorimer Fison Navuloa, Fiji, April 10, 1879

. . . .You cannot think of what pleasure your kind expressions of approval give me. They repay me for all the trouble my work has caused me. I am now picturing you to myself as on your visit to Washington, and using your powerful influence on our behalf with Prof. Baird. Let us hope that you will prevail with him. It would doubtless have been advantageous in one sense to have written my memoir during the lifetime of Prof. Henry. But I cannot be sorry for having refrained. Had I written it then I should now be preparing to recant certain opinions which I held. And even now I see that there are points requiring more light. I was very nearly putting aside my papers when about half way through the "Origins etc." and writing to Howitt that I had resolved to wait for more information. But the thing is done now. I do not think there will be anything of importance to retract, but there is much more evidence to be gained which would have come in well and effectively.

. . . .I trust that you have ere now received my appendix, and that it meets with your approval. My edition of Lubbock's *Origin of Civilization* is not the fourth as you suppose but the second. I have not seen the fourth edition containing the attack upon you. I have very slight opinion of that work. Its bulk is composed of mere extracts from other works, and its generalizations are I think hasty and incorrect. Such a work could be compiled by anybody who could afford to give an ordinary clerk a pound a week to make extracts from works on Savage Tribes in any good library. Moreover, Lubbock takes travellers' inferences as ascertained facts and generalizes from them. For this he is justly rebuked by Tylor. Wherever his assertions come within the range of my investigations he is incorrect, sometimes absurdly so; and the same remark about him has been made to me by scholarly men elsewhere the best part of whose lives have been passed

among savage tribes. I do not mean of course to maintain that travellers' statements are of no value whatsoever. The statements of fact which come under their notice are of very great value; but when they attempt to account for the facts and to draw conclusions from them, then they are almost sure to fall in error unless their knowledge of the tribes be sufficient to enable them to look at the facts from the native's standpoint. This knowledge is very rarely possessed by the passing traveler. I have indeed known not a few instances of men who had passed 20 or 30 years among savages without acquiring it. And such men are certain to be wrong in their conclusions because they measure the facts by outworn standards. It would be amusing, for instance, if the thing were not so mischievous, to listen to legal arguments as to land tenure here—arguments based on English law. . . . .

I think we shall have to take into consideration the following probabilities. All the tribes had formerly the Malayan system, but some advanced by natural causes acting upon them from within, while others were propelled by forces from without.

As long as the tribes remained nomad hunters, or pastoral, descent through the mother was not likely to be disturbed, if they were left to themselves. But when the hunters or herdsmen settled down to agriculture, the tendency must have been to division of property, to personal acquisition, and to agnatic descent. This is no more than what you have observed in another way. But what I have been forming in my mind is this. An undisturbed people would naturally advance gradually by such natural causes as "the reformatory movement" followed by the discovery and gradually extending use of cereals or even tubers (for rootgrowers are many). Having thus advanced and reached agnatic descent, they would naturally become stronger than tribes in the older condition and conquering them would bring in their system upon them.

In other words, among some tribes their progress being a natural growth, kept pace with their ideas, on other tribes an advanced system—in advance of their ideas—was imposed. Hence we may find tribes which have not passed through the experience of the reformatory movement and who yet do not permit the marriage of brother or sister. Such a tribe I take the *Bua* to be. Say for instance, that a tribe under the Malayan system is overborne by a tribe which has advanced to the Turaniana. The new system is forced upon them, but the ideas of the old systems are still in their brains. The new regulations forbid the marriage of brother and sister; but those who, according to Namata are *veicvaini*, *veivaivani* and *veitavalem* are brothers and sisters. The old terms hold them still, and do not permit their marriage. In the *Ba* system we see the new term *tavale* coming in and

taking its place side by side with brother and sister. The *first veitavalini-veitacini* may not marry but their children may. And even in that tribe I find that if those first cousins are bent on marriage, they carry out their purpose, though the elders grumble and protest. The young men say "*Tabu ga ko ira nagase tara ga koi keda*" meaning "Our fathers could not do it, but we can." Compare this with the *Bua* utter abhorrence of the marriages and we have an instructive view of the change of public opinion.

. . . .I feel quite sure that your extensive lists having established the logic of the systems, these of mine are now sufficient to establish the status of a system. Investigators henceforth can always appeal to your Tables, and their labour will be much less than was yours.

Lorimer Fison Navuloa, Fiji, April 27, 1879

. . . .I owe you far more than I can ever repay. It was you who first set me to work on a subject which has given me the keenest delight for years and which has led me to the acquisition of knowledge which I should not otherwise have attained.

Lorimer Fison Navuloa, Fiji, May 30, 1879

. . . .To have gained your friendship is more to me than I can express without using words which would have the appearance of extravagance. I don't know what it is but it is something more than the fact that "our line of investigation has taken a long turn in the same direction" which causes my feeling toward you. . . . .

. . . .I note your remarks on the gens and phratry and am inclined to think that the difference between us on this point is more apparent than real. Like yourself I believe that the "phratry comes later than the gens" simply because, it seems to me, the phratry can not be until the gens subdivides into smaller gentes. These together form the phratry which is consequently coterminous with the original gens. You seem to have observed among the American Indians that the gentes separated and then *subsequently* reunited into a phratry. I cannot see that this was the case with the Australians and other tribes which have come under my own eye. They have gone through no breaking off and reuniting, as I read their history. Their divisons and subdivisions seem to me to be simply growths throwing out branches from the stem which is the commune. . . . .

Lorimer Fison Levuka, July 19, 1879

I want to thank you for the Introduction which is an extremely valuable addition to our memoirs. . . . . .Your expressions of approval of my work will be highly valued by my friends in England.

. . . .The Royal Society of Victoria accepted and will print in Transactions a paper of mine on the Customs of the Mota, Bank Islands. This is a compilation of letters written by Rev. R. H. Codrington of the Melanesian Mission, together with notes of my own which make up more than half the manuscript. I also sent to England a paper on Fijian Burial Customs and another on Land Tenure in Fiji. . . . .

Our Colonial Secretary the Hon. J. B. Thurston sent me the number of the Spectator containing the review of R. Brough Smyth's work to which our letter refers. I returned it to Mr.Thurston together with a note stating my opinion that the review was by Lubbock. It is so far satisfactory that it shows the controversy is fairly launched and is attracting attention. Lubbock has fully committed himself to adverse views and he will doubtless fight with increasing bitterness as evidence tells more and more against him. I owe him payment for certain contemptuous words about missionaries, and have taken occasion to point out others of his inaccuracies besides those noticed in my Memoir. He certainly does not understand the consanguinity and affinity question.

I should very much like to know your opinion of my theory as to the Kurnai system. Do you think it is tenable? Howitt says that he is fully convinced that it is the true one.

Lorimer Fison Navuloa, Fiji, Aug. 1, 1879

. . . .Enclosed is a copy of a letter which I addressed to the Editor of the Saturday Review:

In a review of Mr. R. Brough Smyth's work on the Australian Aborigines which appeared in your issue of March 22nd the following passage occurs: "Mr. Alfred Howitt who examined for Mr. R. B. Smyth the Systems of the Brabrolong local tribe, unfortunately bases his narrative on the second hand knowledge of some of the speculations of Mr. Lewis Morgan. Now Mr. Morgan has two sets of theories, one published in *Systems of Consanguinity* and the other in *Ancient Society* and both confused, conjectural and unsatisfactory, in the highest degree . . . . . As Mr. Howitt had a second hand version of Mr. Morgan's hypothesis in his mind when he began, his account is necessarily of no value."

The Reviewer is certainly mistaken as to matter of fact and I think mistaken as to a matter of opinion also. As to the matter of fact I am able to state positively that Mr. Howitt had not "Mr. Morgan's hypothesis in his mind when he began" simply because that hypothesis had not then come within his observation. He began to examine "the System of the Brabrolong" that is their System of Consanguinity and Affinity (with their customs in general he had long been intimately acquainted) in order to furnish me with the terms used by the natives to denote certain specified degrees of relationship. These he obtained by means of an ingenious process patiently carried out, and the terms so ascertained suggested to him the

principle of Morgan's hypothesis before he became acquainted with it as Mr. Morgan's. It is therefore not true that he "went to look for Punaluan and Turanians and found what he sought" as your Reviewer so confidently and so courteously affirms.

The opinion that "Mr. Morgan has two sets of theories both confused, conjectural and unsatisfactory in the highest degree," has been stated elsewhere by Sir John Lubbock. But his strictures on Mr. Morgan's hypothesis are quite sufficient in themselves to show that he has most unaccountably failed to understand it and grasp the meaning of the facts, on which it rests. Mr. Morgan has not "two sets of theories" on the matter in question, the hypothesis stated by him in his *Ancient Society* being identical with that contained in his work which Sir Henry Maine justly designates as "a remarkable and very magnificient volume on the *Systems of Consanguinity and Affinity in the Human Family*" (*Early Hist. of Inst.* p. 68). Mr. Morgan's hypothesis is doubtless "unsatisfactory in the highest degree" to those whose preconceived theories are upset by it: it is "conjectural" only in so far as its distinguished author having brought to light a number of indisputable facts, offers it asa reasonable explanation of those facts: and it can appear "confused" to those only who have not studied it with care sufficient to enable them to understand it. It receives strong confirmation from the intersexual regulations investigated by my friend and fellow worker Mr. Howitt and myself among tribes scattered over an area of sixty degrees of longitude by thirty of latitude in the South Seas: and whether it be right or wrong there is certainly nothing in the hypothesis itself or in Morgan's way of stating it, to justify contemptuous discourtesy with which it has been flung aside as "utterly unscientific" by Mr. McLennan and by at least one other of Mr. Morgan's English critics.

Memo. I observe you write A. W. Howitt R. F. G. S. I wrote his title thus in mistake in my Ms. but corrected it in a subsequent letter. He is a fellow of the Geological Society not of the Royal Geographical, though I think they might have given him that acknowledgment of his labours as a distinguished Australian explorer. His title therefore is F. G. S. . . . .

Lorimer Fison Navuloa, Fiji, Aug. 17, 1879

. . . .Edward B. Tylor is extremely anxious for information on the very points set forth in our "*Contributions* etc." The evident anxiety of the English anthropologists for a setting forth of the facts connected with the Australian classes makes the unavoidable delay at the Smithsonian all the more grievous. . . . .

Lorimer Fison Navuloa, Fiji, Sept. 14, 1879

. . . . I quote the letter which I wrote and which Tylor read:

"From them (the Australian classes) it can be shown with the positive certainty of a mathematical demonstration that the terms used in the Classificatory System of Kinship, as given in Mr. Morgan's *Ancient Society*, necessarily flow from these divisions."

The letter was an old one written before I began my manuscript and gives my sister an outline of the work I had set before me. I was glad to think of Tylor reading that statement. But I don't feel wicked toward him as I do toward McLennan and Lubbock. . . . .

. . . .After my fifteen years in Fiji, where I have been living among the natives and talking with them every day of my life, I find more and more cause to believe that I know comparatively little about them. It takes a civilized man 10 years to get out of his own mind world into that of the savage.

Since I last wrote I have received from England McLennan's *Studies* etc. There is much in it that is well worked out, but he has committed himself to a false theory, and is most discourteous to its disturbers. "This wild dream—not to say nightmare—of early institutions." What does a man deserve who writes like that. His interpretation of Orestes' case is correct in so far as he shows it is based on former prevalence of Descent through the mother, but he has not perceived the *legal point* involved. Like Lubbock he does not understand the difference between personal and gentile relationship . . . .

Lorimer Fison Navuloa, Fiji, Oct. 1, 1879

. . . . We will publish it at once (*Kamilaroi and Kurnai*) through Australian publisher George Robinson because Tylor urges that information which we have to supply is precisely that which he and others have been eagerly searching for. He says that he has been trying to get at it ever since the publication of your *Ancient Society* . . . . .

Lorimer Fison Navuloa, Fiji, Oct. 10, 1879

I have reread McLennan's book with great care and cannot but acknowledge that there is much in it which is very valuable. . . . .What a pity that he should have committed himself to an erroneous theory on account of his facts; and what much greater pity that he should be violent and abusive toward facts which upset his theory while they fall in with and substantiate the facts which he himself has collected with such industry and clearness of insight. . . . .

Lorimer Fison Navuloa, Fiji, Jan 6, 1880

We find it necessary to withdraw our Mss. from the Smithsonian. Prof. Baird's promise of publication 1½ or 2 years after acceptance of the work is fatal to its prospects. . . . .I did not mention in my last letter the fact that Sir Arthur Gordon's having seen my letter which was forwarded to E. B. Tylor is a sharp spur to us. It is known that he is collecting materials for a work on the natives and he seems to consider that he has a heaven born

right to the use of other peoples' brains and labours. That letter sketched the whole framework of my memoir and told him several things which I should not have cared to tell him until they were out of his reach by being well on their way to the publisher. Our sole reason of withdrawal is absolute necessity for speedy publication. The Rev. Geo. Taplin (or rather the S. Australian government for him) has already published a most absurd book on the Aborigines, in which he coolly appropriates things which Howitt and I wrote to him, copying whole paragraphs from our letters without even a hint of acknowledgment. Another man called Curr is in the field and he is in possession of several of our facts. Moreover, our printed circulars long ago set him on the track. He wrote to Howitt claiming our territory. As Howitt said in his letter to me thereupon: "If we don't make haste we shall be accused of ploughing with the Taplin and Curr heifers."

Doubtless you have ere now received the paper on McLennan's theories which I sent you. It forms a part of my "General Summary" and it is preceded by a few pages in which I attempted to show the absurdity of his process of reasoning by which he makes the savage arrive at his system of kinship through females. I begin by noting his grandiloquent condemnation of your "conjectural solution" as "utterly unscientific" and introduce my argument thus: "Having absorbed the bane of an utterly unscientific theory throughout so many pages of these memoirs, let us now apply ourselves to the examination of a scientific hypothesis by way of an antidote." I then take up his statement at the commencement of his eighth chapter that "the earliest human groups can have had no idea of kinship," point out that in the very next paragraph he speaks of a "group of kindred" which was "held together by a feeling of kindred." Here then I remark "we have a group of savages who have a feeling of kindred strong enough to hold them together, and who yet have no idea of kinship." I have not felt myself bound to abstain from a little irony in dealing with that gentleman. His astounding arrogance toward yourself permits me to use here and there a form of words which I should never use toward a courteous opponent. But I have been sweetly polite withal.

After the examination of McLennan's theories, I glance at Lubbock's hypothesis as to Individual Marriage, Exogamy and Female Infanticide. Having quoted such of his own words from his Origin of Civilization as are necessary, I sum them up. . . . .

I then go on to point out the fallacy of his unsupported assertion that the captor has a sole right to his captive. And this is the basis of his whole theory. I defend him against McLennan as to Expiation for Marriage, but try to show that he does not clearly distinguish the group to whom the

expiation was due. In conclusion, having pointed out the accepted facts that the Group is the Social Unit as to Land Tenure, Inheritance, Succession to office and Blood Revenge, I remark "If then it is to be the group, not the individual that holds land, that inherits, that strikes and is struck, what difficulty is there in the way of our accepting the fact that it is the group which marries and is given in marriage? And if group marriage be accepted group relationship follows as a matter of course."

I wind up with a word about the Degradation Theory, which I consider untenable, and then add an appendix on the evidence afforded by certain statistics of our heathen Hill Tribes as to Female Infanticide. They go dead against McLennan's theory.....

Lorimer Fison Navuloa, Fiji, Feb. 8, 1880

. . . The particulars you suggest are nearly all of them given in Williams as far as the Fijians are concerned. I fear that I shall not be able to do the work on the scale you suggest, but I am doing what I can. Bits of the work I am sending out as I get them into shape and if I live I shall collect them some day into a book. But this is not what I proposed to myself as my next effort. My design is to endeavor to show the intermediate steps between the clan of nomad hunters with uterine succession and that of settled town dwelling agriculturists with descent through males. These steps can, I think, be found in Fiji and other island groups. Mr. Bandelier's Memoirs are full of light on this subject and I should be glad if you would convey to him my sense of the great value of his writings. Not that my opinion is of any great weight, but it cannot be unpleasant to hear that his work has helped another who has followed somewhat similar studies and gone on a somewhat similar line. As far as I am able to judge, Mr. Bandelier has thoroughly proved his proposition and this in a style which is at once masterly and a delight to the reader. I almost stand aghast before the evidence of the extent and industry of his research. It makes me feel almost painfully small—a feeling which always comes over me when I open your own books

I heard from E. B. Tylor by last mail. I told you I had written to him in reply to his note handed to me by Sir Arthur Gordon. He sends me a copy of the Academy containing a review of your *Ancient Society* and another of his address before the British Association. He writes like a man that has been staggered by unexpected evidence, and acknowledges that it would have been "safest to wait for further information." Let me tell you that he speaks in the highest terms of your work. "Mr. Morgan's *Ancient Society*," he says, "is of great value throwing light on the early marriage systems of the world." I have written to him very fully in reply. He sup-

posed that Mr. Lance had written to you direct, and to be the sole authority for the statement about the Kubi and Spartha. I told him that Mr. Lance made the statement to *me*, that I verified it by enquiry from other competent informants and forwarded it to you. That "Donald is most certainly the husband of all the Janets" it being understood that "husband" means a man of the group which is husband to the Janet group. He speaks of my "explanation of the rule meaning that the man has a temporary wife given him from the proper class." I reply that it means this and something more. It means that the man has a right to the woman, that he can claim the right to meet her in the bush; but that if he goes to the camp he makes application for his right according to the proper etiquette.

I have moreover told Mr. Tylor that in his objection to the form of the term "spouse" he seems to me to state your case exactly. "The term means precisely what you say—a 'woman of the class one may marry into' or rather 'of the class to which mine was born married.'" I have told that I am positive that the term "spouse" is never used to a woman out of the wife class. It could not be. It is that *class* which is "spouse" to the husband-class.

As to the gens, I have said "I note your objection to Morgan's use of the term *gens* and I bare my own back to the rod, for I too have offended. But why should we restrict the word to the gens as it was constituted in Rome? The word itself is not the exclusive property of the Latin tongue; and the thing, in various stages of development and with different lines of descent, is found from China to Peru." It is evident to me that Tylor has put more in your words than you meant by them. He has understood you to mean that the Iroquois gens is in every respect identical with the Roman, not merely that it is the same institution in a lower stage of development. So also he has understood you to mean by "marriage" actual cohabitation instead of the right of cohabitation which was a birthright, but which present usage may among many tribes even scarcely acknowledge. I have told him as plainly as possible that he has mistaken you; and add as follows:—"I think that it is certain that my view of Mr. Morgan's meaning as to cohabitation and marriage is correct. Not only have we been in correspondence for nearly twelve years but he has also read my Mss. and has written a prefatory Note which will be published together with them. My own views as I have briefly stated them to you, are fully set forth in my Memoir and he says in his Introduction that there is most perfect agreement between him and myself save as the manner in which the four classes (Ipai etc.) were formed. He could not say this if he meant by group marriage more than I mean." I think that Tylor will find that his objections have arisen chiefly on account of his putting into such words as "wife" "marriage" etc.

the full meaning which they bear with regard to our own system. May I take the liberty of suggesting that you perhaps scarcely make sufficient allowance for the strength of natural prejudice against which your theory has to make its way; and when to this is superadded a misunderstanding of your meaning the obstacle becomes very great.

A friend of mine in England tells me that the secret of McLennan's bitterness against you is that he took it into his head that you made use of his *Primitive Marriage* in your "*Systems*, etc." without due acknowledgment. Hence the "dash of vitriol" etc. I replied scouting the notion and saying that you certainly had no need to go to *Primitive Marriage* for information which the facts ascertained by your own laborious researches so abundantly supplied. There are many passages in McLennan's book, besides those referring to you which show him to be an ill-conditioned man. My friend tells me that he is completely broken down and not likely to be able to do anything any more. I must take a little of the most concentrated essence of bitterness out of that part of my Memoir which deals with him.

I am glad to have been brought into correspondence with Tylor, but I wish to say in concluding my letter that neither he, nor any or other man, can be to me what you have been, are, and will be. It was you who first led me to the field, and guided my earliest efforts. Your kind appreciation of my work has given me lasting pleasure, I have been proud to look upon you as my leader, and you have made me very glad by calling me your friend.

A. W. Howitt Sale, Victoria, March 22, 1880

Secret piracy necessitates immediate publishing. . . . .

With your permission we propose to dedicate our work to you. I may say for both of us how high we shall value the privilege of having your name associated with our labours which without your magnificent work could never have been.

Lorimer Fison March 26, 1880

. . . .In 1855 I entered at Caius College Cambridge, kept terms such as reckon for one year's residence, passed the College Classical and Theological Examinations and then left the University before the Mathematical Examination took place and returned to Australia. Some years afterwards, I wrote from Melbourne to the Rev. Charles Clayton, the senior Tutor of my college for my testimonials etc. He sent them accompanied by a very kind note stating that "Mr. Fison left the college before the mathematical exam took place but from what I heard from the Lecturer, I have no doubt

he would have stood creditably on the List." I may tell you that I was one of the three men who were spoken of as likely to run one another close for the first place for our year in Mathematics. On presenting these documents to the Council of the Melbourne University, I was at once admitted as an undergraduate of one year's standing and should have completed my course and taken my B.A. degree if my way had not been unexpectedly opened to the Mission work in Fiji, in which I have been since engaged. As far as acquirements are concerned it is making no claim to say that when I began my residence at Cambridge after reading with my brother-in-law, Mr. Robert Potts M.A. of Trin. Coll. during the previous long vacation, I could have easily taken an ordinary degree, if I had gone in for the Examination and in Mathematics I could have taken low honors.

I am interested to know whether I can receive an honorary D. D. or M. A. in an American University. I feel ashamed of going into print without the letters to my name. It is like going out imperfectly clad into the street. . . . .

Lorimer Fison Navuloa, Fiji, May 13, 1880

. . . .You will be glad to know that considerable interest is taken in our work by some of the leading gentlemen in Victoria, three at least of whom are "walking advertisements" of it. Howitt had two hours' conversation with Professor Hearn, who got quite excited as our plan unfolded itself before him. He and the Chief Justice arranged to wait on the Minister of Justice and urge that Howitt should be released from his magisterial duties for a year and have "special allowances to enable him to prosecute these most important researches with library assistance" . . . .

Tylor is not inclined to be so decidedly in the opposition as you imagined. Depend upon it your theory will bear down all opposition. There may be still a good deal of snarling from disappointed and jealous men, but your hypothesis is true and it will therefore prevail. You understand however that, as far as I am concerned, I stop short of what I have ventured to specify as the Undivided Commune—i.e., promiscuous intercourse of the sexes in a community not divided into exogamous clans. I simply stop short because I cannot find any positive evidence, though I do not deny a strong probability. My position is simply this—I go as far as the direct positive evidence will take me and there make a stand. I do not say that there is no road beyond nor do I deny that there is what looks very much like a road, but I do not see the ground under foot for the next step. Nothing that is true can be hurtful, and I am not afraid of any fact that can be proved. . . . .

Lorimer Fison Navuloa, Fiji, July 15, 1880

. . . .I shall read the article on gens in the Enc. Brit. as soon as I can get at the book. One thing is certain. If Tylor wrote "the Roman gens is the only gens we know" we need not wonder that he fails to see the identity of the genos and gens with the exogamous intermarrying divisons. He might have said "no other gens within our knowledge is precisely coincident with the Roman gens" but to assert that the gens is the Roman gens and no other is a very queer assertion. He might with equal justice have said "the Roman *Balneae* are the only baths we know" . . . .

The change of descent divides itself into two forms. (1) What we may call orderly development and (2) disorder, breach of existing regulations resulting in change. Of these the former is that so ably pointed out by yourself—property—especially land settlement for agriculture brings about an increasing tendency to direct inheritance instead of through the mother. The second shows itself remarkably in Australia. Elopement, we have found when successful to have resulted in a change of line of descent, and we have even found two tribes which have agnatic descent and hereditary chieftainship involving service command or rule and right to supplies of food and property. These tribes have still a survival of the class divisions in various stages of decadence and from them we can construct an ascending series leading up to the Fijian social organization, and account of which you will see in my paper on Land Tenure in Fiji to be published by the Anthro. Soc.

Then we have a remarkable paper by Codrington on the Affinity of the Melanesian, Polynesian and Malay languages, which proves the complete isolation of the Australians in a very remarkable way. This is valuable as showing the rebellious movement in Australia to have been indigenous and spontaneous, not the result of external impulse. The Kurnai again show, I think, the disruption of a class-organized tribe and the new regulations *forced* upon them by the change of cirumstances. Elopement on the other hand is rebellion against class law. Where it has established itself successfully, it can be shown to have compelled the abandonment of uterine succession. I believe too I have found the explanation of infant betrothal among savages. It is a protection against the old communal right, bringing as it does the *tapu* of the husband upon the female. It is not a little significant that if a man to whom a girl is betrothed dies or breaks the bond by running off with another girl, in some tribes the young men of his group wrestle for the girl. In other words their communal right reasserts itself, the *tapu* being taken away.

I think I have also found out the secret of the so-called "Incest in

Marriage" among the ancient Peruvians noticed by so many of the old writers and even by the Xtian fathers. It reproduces itself in Fiji and elsewhere and *is confined to the chiefs*. The chiefs consider themselves entitled to override ancient custom which makes Right. Their Power is a new factor, a disturbing element among old rules. That power ceases with the death of the chief, and a certain amount of temporary anarchy is sometimes the result. This is pointed out in my paper on Burial Customs in Fiji already by the Anthrop. Soc. . . . .By the way, the funeral of Wm. the Conqueror gives a striking proof that the ancient right of the commoner was not destroyed but only held in abeyance by the usurpation of the chief. When the clergy were about to lower his body into the grave within the church he had built, they were forbidden by a commoner who owned the ground. "The ground is mine. My father's house stood upon it. The king robbed me of both house and land to build this church. In the name of God I forbid his body to be covered with earth that is mine by right." And the clergy acknowledged his right and paid him 60 shillings for the grave. This is a remarkable case showing how even so far down in our own history, the right of the commoner was acknowledged as *law*. The king could override the law of right by the strong arm of might, but the right remained unshaken for all that and reasserted itself when the strong arm had become powerless by death. I feel a wicked malicious delight in tracing back aristocratic notions of the ways of savages and showing that they are mere unreasonable survivals of savage notions which were perfectly reasonable in their day. I am told that I horrified Sir Arthur Gordon, and the young gentlemen of his suite by asserting that the crests of our armorial bearings are nothing more than a survival of the totem; that hereditary chieftainship was a mere savage growth out of birthright and polyandry with descent through the males, and that the pride of birth was perfectly reasonable when a man had to be a full born member of the clan in order to attain a full status in the clan, but that it is utterly unreasonable at the present day, unless indeed a man's ancestors were men of worth of whom anyone might be proud. This the most horrible blasphemy in the ears of those young men. It sounds like plain commonsense to mine. Among tribes of the N. A. Indian grade with uterine succession, there can be no such thing as a base-born man among those who are born of the woman of the tribe. But where you get among tribes like the Fijian, who have descent through males, birthright and polyandry, you soon get all manner of distinctions of rank, from the poor wretch "the child of the path," child without a father, son of a pig, son of a whom perhaps, son of a clam, who was not *born* at all, up to the chief who is so high born as to be god born—the Lord himself, the Baal

of the Baalim. Yet under all this load of rank there is a full born commoner, who in conjunction with his kin, is the real owner of the land of the town and the arable, and who has the forest right. His house is the dominion, he rules within it. It is a sanctuary which no chief has a right to violate. The chief may oppress him if he be strong enough, and the commoner may submit in silence. But in his heart he holds the consciousness of his ancestral right which came to him from his fathers. He never forgets it, never allows that it can be destroyed, and watches for the opportunity to assert it. If any man wants to study the real aristocratic notions he should identify himself with one of these tribes and watch their action. It is an instructive and disgusting study.

Lorimer Fison Navuloa, Fiji, Sept. 7, 1880

. . . .I am a little over six feet high and of pretty broad and stout frame weighing no fewer than 224 pounds. A month ago I weighed 238 but I have been taking Allen's Anti-Fat with the happiest results and am gradually dwindling down in a most satisfactory way to a respectable size.

I see Tylor is advertising a new book *Anthropology*. It is a big title, almost as big as if one should write a work and call it "Universe."

Lorimer Fison Navuloa, Fiji, Oct. 1, 1880

. . . .With regard to the Consanguine family. I accept it theoretically as presenting the only reasonable solution of the terms of Kinship such as those of Hawaii, Rotuma etc. All I say with regard to it as a stepping point is precisely what you say yourself—that no tribe has been found with it in present existence. The traces of its former prevalence appear to me to be clear and unmistakable but I cannot say of it what we can say of the exogamous intermarrying classes, simply because we can find the latter still prevailing. You must take into account the fact that my position indicates extreme caution in my statements. I should shock and grieve many of my best friends whom I should be very sorry to offend, and who might easily be offended on such a matter. Some of our old-fashioned ministers for instance. Hence while I do not feel at liberty to exercise a reticence which would be cowardly and dishonest, I feel constrained to exercise the very greatest caution in my statement. My own opinion is that the former existence of the Consanguine family is proved by the evidence but I do not assert this. I point out that the evidence *seems* to establish it; but that as we can find no present instance of it in actual existence, we need not go any further back than the Divided Commune while investigating the present gentile arrangements and comparing them with those recorded in history. I hope this will be sufficiently clear from my book. My statement is in brief—

The evidence points strongly to a former Undivided Commune. Granted this, and from your "reformatory movement" all the rest flows. This seems to me to be a strong argument for the old Undivided Commune, but I have carefully guarded myself against a *positive assertion* that it existed. Moreover, I am not satisfied in my own mind that the matrimonial right was ever exercised habitually to its full extent. The right existed and was acknowledged. It is the one fundamental fact underlying the whole system of relationship. But it seems probable that its actual assertion in the individual cases would soon become restricted more or less. This, however, does not in any way affect the main theory. The right is fully established and its general exercise is still apparent on occasions. Only by last mail, Howitt sent me an account of an Australian tribe non-Kamilaroi who betroth their girls in infancy. When the "husband" considers the girl is of sufficient age, he goes after her into the forest with his friends and seizes her. Not he but his friend consummates the marriage. The girl is common for some days to all his tribal brothers and not until they have all exercised their right, does his own come into force. But henceforth it is paramount. This is a very striking instance of expiation for marriage. I have fully satisfied myself by inquiries in Fiji that infant betrothal is a protection against the old communal right. . . . .

Lorimer Fison Navuloa, Fiji, Oct. 7, 1880

. . . .I have been thinking over what I said to you about the Consanguine Family etc., and it occurs to me that I may as well say a little more. From your own remarks I am afraid that my words have been taken by you and may perhaps be taken by others to mean more than I meant by them. For my own part it seems clear to me that we need not go beyond the exogamous clans or clan for an explanation of all the *later* developments up to and far on this side of the Roman gens, provided always that we recognise the vast importance of the descent from females to males. This is the work toward which I have set my face and everything which is beyond its outer line is unnecessary to my purpose. . . . .When I say that to the point where I stop "is far enough for us to go" I mean that it is far enough for my own purposes. The road beyond is extremely tempting. It shows itself clearly to me and looks like a solid road. To my own mind the proofs of its existence are such that nothing but its existence (i.e., its former existence) can account for the facts. But we cannot find a present instance of it. Its use has passed away from the earth as you yourself affirm: the task I propose to myself is to trace the steps in the formation of the gens from the present usage of savage tribes, and therefore what is beyond that present usage is foreign to my purpose. Even this however, requires explanation and great qualifi-

cation, because in point of fact I do go beyond present usage, and I had to guard myself against positive assertion of the former existence of the Undivided Commune. As it is, several passages in Kamilaroi and Kurnai appear to take it for granted. In my own mind I accept is as sufficiently proved, but I do not positively assert for these two reasons:

1. I expect violent opposition and therefore resolved to narrow as far as possible the ground of controversy.

2. The Undivided Commune means nothing more nor less than "promiscuity" and this would be terribly shocking to many of my best friends among our ministers. They would suppose it to involve conclusions which do not appear to me to be involved, and no argument of mine would avail to persuade them that the theory is not subversive of "the faith." As it is, I have had some little trouble and expect more. . . . .If at any time we can find a tribe of savages living in the condition to which the evidence points, then I shall be constrained to go farther myself and to *assert* that which I now admit only a strong probability. I admit this probability in my book and in my own mind I admit more than a probability. In short I do not doubt the former existence of the Undivided Commune but I do not consider it as necessary to my purpose to assert it and moreover (owing to my surroundings) it were better for me not to assert it as long as assertion is unnecessary.

. . . .You say "If you believe the Consanguine Family to be the necessary deduction from the Polynesian system, I shall feel greatly assured." I have no hesitation in saying that I do consider it, because in no other way can I account for that system. The *theory* of marriage among savages appears to me to be clearly based upon the fundamental notion that the *Individual*—the Social Unit—is a Group of Individuals. Hence flows logically the entire system of relationship and descent. And the constitution of that group is determined by the terms of relationship. As I say in my chapter on Group Mar. and Rel.—"The terms of kinship now in everyday use point out the groups and the groups taken as units explain the *raison d'être* of the terms." But for the special purpose of my work I do not consider it necessary to go beyond the division of the group into exogamous groups such as we find in the present day. Purposely, as far as I am concerned, I have narrowed the controversy to this ground. Thus I have taken up as it were an advanced post which seems to me impregnable and which covers the country behind it. If it can be maintained, we may defy the enemy's attempts to get behind it.

. . . ."Unattached": In savage society, at least where the clan organization has not been broken up, a man cannot exist without some sort of

connection with some clan or other. In Fiji, where we have a distinct god-born class of chiefs, or nobles, broken men frequently attach themselves to a chief and are very useful to him. They have no status in his clan. Hence they are anxious to distinguish themselves by usefulness in peace and by bravery in war, for thus only can they earn the right to exist. Hence arises the practice of Commendation. A broken man must attach himself to somebody or he perishes. A Noman's man is like a barnacle which misses its way and finds nothing to adhere to. There is no possibility of independent existence. . . .

A. W. Howitt Sale, Oct. 11, 1880

. . . .Received First Report of the Archeological Institute of America containing your paper on the villages present and past of the American Aborigines. It opens up a great vista and a vast field for research. It is a pity that we have not got such a society here to take in hand the Australian Aboriginal work. I shall make strenuous endeavor to induce our governments to give some aid but with what result I cannot yet forsee.

I may mention as of interest that all the information that I am now collecting fully confirms the statements we have made in the Kamilaroi and Kurnai. . . . .

Lorimer Fison Navuloa, Fiji, Jan. 28, 1881

You will allow me to express my appreciation of the remark in the *Popular Science Monthly* article by Powell.

"It is not one of the least of the results accomplished by Mr. Morgan that he has gathered about him loving disciples who are reaping harvest from fields planted by himself."

We only who have worked under your direction can feel the full truth and force of this remark. The more we have been able to do, the greater has been our sense of obligation and personal attachment.

. . . . Mr. Albert S. Gatschet, the linguist, applied to me for some information as to certain Fijian songs, which I was glad to give him at some little length.

. . . . I am glad you are satisfied with the position I take up as to the last step of your theory. All I proposed to myself was to go as far as ascertained existing facts take us, and by "theories which overleap the facts," I mean not theories which are probable inductions from them, but those which like McLennan's polyandry hypothesis and Lubbock's sole right of the captor, do not take their stand on the facts and follow them whither they go. Howitt, as you will perceive, goes to the full length of the theory,

and takes it approved that all civilized nations have passed through the same experience. Indeed, he holds views which I think you would hesitate to accept. We agree fully as far as we go together, and beyond that point we agree as fully to differ, allowing each other that freedom of thought which he claims for himself. . . . .

It strikes me forcibly that Andrew Lang must be the critic who attacked Howitt in the *Saturday Review*. Tylor said it was not Lubbock.

A. W. Howitt Sale, Feb. 14, 1881

. . . . That you should be pleased with my work is most gratifying and the flattering manner you have mentioned my part is praise indeed. I hope in the future to be able to publish more and more and am striving to the utmost to gather all the information procurable. My plan is at present to secure correspondents throughout Australia who will work under my direction. I find this satisfactory in default of a better opportunity for personal inquiry. I am in hope of being able by and by to interest our government in the work, and shall of course keep you posted from time to time. That which you say as to a future work is very encouraging, as the line which you suggest is that which Mr. Fison and I have determined to follow. The change from descent through the mother to descent through the father is a most important subject, which will be of use in opening up the subject and perhaps causing enquiry and discussion. The causes which have led to the change here are as yet not clear to me, but I have hopes that a careful and scientific discussion of the evidence may afford light. . . . .

Lorimer Fison Navuloa, Fiji, March 2, 1881

It gives me the greatest pleasure to know that you approve of what we have done and think that we have well made out our case. But if your pupils have done well the credit belonging to their teacher must not be forgotten. One of our Australian reviewers says well, "It is really to Dr. Morgan that we owe this valuable etc." I was pleased to read those words.

The same mail brought me a letter from Tylor who has seen our work and taken a great deal of pains to further its sale. He says

"You have made an important step in the difficult problem of early society. . . . . You seem to have let fly with much vigour at Mr. McLennan and those who hold his views and doubtless you will receive the like again."

From a private source I learn that he spoke in terms of high praise of the work in conversation at the house of a friend, but deprecated my "pugnacity." It is a novel experience in my life to be credited with a sort of Hibernian fondness for a "shindy." If McLennan had argued courteously

against your views I would not have expressed myself quite so strongly with regard to his own, but I hope in all events that I have not treated him discourteously. However, Tylor is doing all he can to help us and says in his letter that he will call attention to our work in his address at the Anthropological Inst. on Jan. 25. . . . .

. . . . I must express once more my great satisfaction with your contentment as to my position on the Undivided Commune. Whatever fighting there may be over the U. C., of one thing I am perfectly sure, that its former prevalence can never be *disproved*. Whether any more than the very strong probability already established by yourself can ever be *proved* is another question, and one into which I do not propose to go unless we find tribes with the U. C. still in existence. I do not think this is likely to occur. But if it does I certainly shall not hesitate to accept the consequences. There would then be a *necessity* for taking that further step from which I now hold back.

I am very glad you like the term Undivided Commune. I used it in the first instance simply because it fitted in with the context but without having invented it as a specific term. Finding it useful I repeated it in other passages and Howitt also took it up.

Howitt is getting in more and more materials. He has found a northern tribe with four classes like the Kamilaroi, but with paternal descent. I am immensely excited over this tribe and have written eagerly to Howitt asking whether they do not show marks of former uterine succession. I think they *must* show it. If not we have a new problem to solve. . . . .

Lorimer Fison Navuloa, Fiji, March 18, 1881

. . . . I hope that the work will achieve the object for which it was written, and that the men who so contemptuously and discourteously rejected your theory will find themselves staggered by the facts presented if not by the arguments drawn by the facts. After Tylor's notice in the Address they will not be able to ignore the book; and if they come out in hostile array, their attacks will be of the greatest use in helping us to arrange our fresh material most effectively in our next work. We have a considerable mass of new material—all confirmatory—and the enemy will show the weak places which need strengthening.

Some of our new facts are of a nature such as makes it very difficult to deal with them even in a private letter, and what to do with them I really do not know. To put them in Latin seems almost a childish device for both *virgo* and *puer* of the present day know Latin enough to understand them. The facts are so signi cant of a former prevalent communism that we can-

not afford to keep them back because of their extreme indecency, and so I see no way of presenting them excepting by Latin notes to which reference can be made or perhaps by Latin appendices. But this is very unsatisfactory....

Lorimer Fison Navuloa, Fiji, April 17, 1881

I have received Staniland Wake's two pamphlets. When he gets into kinship classificatory waters he is immediately out of his depth.....

I have a fine capacity for disbelief in the general classifications on the ground of craniology, custom etc. The same thing is found in different strata, and general classifications are consequently hazardous. Besides the facts are often deceptive, and have to be sifted very carefully. Thus Fijians are classified among the frizzly-haired people because their heads look frizzly and ruddy brown. But this is owing to the use of lime and clay pomatum or rather plastering. One might as well have described our late forefathers as white-headed people in the days of grease and hairpowder. Again Professor Flower has lately read a paper before the Anthrop. Inst. on certain skulls of our Navitition Hill tribes. He places them as dolichocephalous and "most narrow skulled of men." But the fact is that these measurements of their skulls are due to art, not to nature. They practice lateral compression of infants' heads and the custom is only local. The conclusion drawn by Flower is much as if one were to describe the Chinese as clubfooted on the evidence afforded by skeletons of Chinese ladies.

Wake's statement that the bow is a mere plaything in these seas may be partially true as to Polynesians, but it is altogether wrong as to the Melanesians, among whom there are many usually classed as Polynesians. The bow is their weapon par excellence, and a very dangerous weapon it is in their hands. Wake makes a point of the word in Fiji for bow *ndakai* but we have also *vuthu* which is the common Melanesian word.

The fact is simply this—very little is known about these islanders, and scarcely a book about them which comes my way fails to astonish me by some statement or other. Thus Sayce, Max Müller's deputy, has lately stated that we have no verbs. I suppose he saw that these languages make all sorts of words into verbs by means of causative prefixes and suffixes, and so he jumped at the conclusion that we have no real verbs. But we have plenty of words which are verbs absolutely and nothing else. I sent to Tylor for the Philological society 4 papers by Codrington annotated by myself. These papers are:

1. Notes on the affinity of the Melanesian, Malay and Polynesian languages proving a common original element.

2. A conspectus of 12 words in 19 Melanesian Languages and Dialects with observations. Appendix to 1.
3. Changes in sounds and letters in the Melanesian Languages and Dialects.

I think they will provoke a profitable controversy and convey much useful information. The theory that the common element in the languages from Formosa through New Guinea, Melanesia, Polynesia, and away to Madagascar is due to Malay commercial intercourse is simply absurd.

Certain customs which I have lately ascertained point unmistakably to an ancient communism, the evidence for which is becoming overwhelming. Among these tribes circumcision itself is a propitiatory sacrifice, when a chief is sick and for three or four days while the ceremony lasts, absolute communism prevails. After the ceremony, individual rights recur. This connects plainly with the Australian recurrence to communism as a propitiatory measure during epidemics, concerning which Howitt is collecting full evidence. The song accompanying an indescribably filthy ceremony connected with the propitiatory rites is most significant: *A mbitu ni si ko ra tamamundou, Era laki ndulu ki Vuni mbou*—which requires an apology for its translation "Your ancestors, *seminis pleni*, lay commingling at the foot of the house post" i.e., the large post supporting the ridgepole in the middle of the house. The house is your "long house" in which the common meal is eaten. Only among our tribes, women and children are excluded. This is the effect of descent through males. The effect of that descent among your N.A. Indian tribes would be an interesting subject of inquiry.

A horrible surgical operation commonly performed in Western Fiji is I believe a distinct survival of a belief similar to that which forms the motive for the temporary recurrence to communism above noted. The operation is performed for any kind of wasting sickness, and the natives can give no reason for it nor explanation of it except "Our fathers did it." A reed is forcibly thrust up the urinal canal until the junction of the scrotum is reached. The organ is then laid completely open by a straight cut down to the reed along its entire length. The natives say that a quantity of dark colored blood is thus released, and that in addition they pick out what they graphically describe as "things like itch spots." During the process of healing the urine often makes a new passage, or outlet, for itself. In other parts of Fiji the operation is performed in a less horrible way. A small stick with a string attached to the end is thrust up the passage. Near the junction with the body a cut is made, and the end of the string pulled backwards and forwards occasionally to keep the wound open and to cause a flow of blood.

Females are thus treated. The female patient is laid down wide astraddle, in water, those regions being immersed. When the soaking is supposed to have continued long enough she is laid on her back, the parts distended as far as possible and then severly scraped with a sharp slip of bamboo, the true Fijian *sele*, the word now for knife. I have seen a baked pig cut up with these bamboo slips. When the edge grew dull, the operator tore off a small piece with his teeth leaving a new edge.

As before mentioned, the natives give no reason for the operation excepting that it is an ancestral custom. But what I suggest is that its primary notion was for propitiation for offense against the old communism law by *torture inflicted on the offending organ*. This would be somewhat farfetched were it not for the connecting practices whose rationale is beyond question. But how is one to publish descriptions of these things?

I have got on the scent of a most interesting custom in the Hill country, but have not yet got to the bottom of it. It is very difficult to get the natives to talk about it to an outsider. In a secluded spot in the forest a space was cleaned. This is encircled with a substantial stone wall. In cases of sickness, offerings of property are placed within the circle. One informant tells me that on set occasions, the men assemble and sit down within the circle. The women then come in bringing baskets of food, which they put down and then run away. The men leap to their feet and try to catch them. Whoever catches a woman within the circle forthwith "uses" her.

But I have not yet been able to verify this account. I may explain here that my invariable rule is *never* to accept a fact that is new to me on the evidence of one informant, unless indeed it fits in so evidently with already ascertained facts that it may safely be at once accepted. This rule involves a considerable amount of trouble, and a little self-denial also for the temptation to use an account which falls in with one's theory is very strong. But I have found it necessary to make the rule and to abide by it.

Lorimer Fison Navuloa, Fiji, June 13, 1881

. . . . The man (Reviewer of *Kamilaroi and Kurnai* in *Saturday Review* of Sept. 12) does not understand the subject of which he writes, and he has not taken the trouble to study the book he criticises sufficiently to enable him to follow its arguments. He does not even understand what "group relationship" means. As for his chief argument resting on the presumably superior knowledge of the subject possessed by Ridley after his 30 years' study of it, I may just say for your own information that Ridley was only three years among the blacks; that he afterwards held the position of sub-

editor of an evening paper in Sydney, where he had no possibility of communicating with the aborigines and that as far as I know he did not pursue any studies connected with their usages after he left there until I pointed out to him in 1871 the significance of the totems and urged him to make further inquiry. I look upon his *Kamilaroi* in 1875 as the direct outcome of my urgings.

. . . . I have nothing to learn from that critique except that it has taught me how mean and offensive spiteful cavilling may appear.

. . . . What does the man mean when he says that it is incumbent upon me to explain why the "primary" divisions were "totemistic?" Does he attach anything more to that word than its real meaning? If not, what possible consequence can it be to my argument whether the names of the primary divisions are "totems" or not. The working of the divisions cannot be in any wise affected by their nomenclature.

. . . . I have sent to Howitt a long memorandum on the series of blood-feuds in the house of Pelops ending with the purification of Orestes. It is a very interesting subject and Howitt wants to make up an article on it. He is a correspondent of Drs. Bastian and Resenbusch and has sent them copies of K. and K. The Germans, as Howitt says, are not likely either to be McLennanites or Lubbockites, and if they discuss our book they will discuss it on its merit and we ask no more than this.

As for the critics, I am not sorry to see that hostility to you has involved hostility to me. I suppose that Sat. Reviewer thought he was administering a telling blow when he wrote the words, "His master, Mr. Morgan." He would not like to know that I felt proud and gratified when I read them.

Mr. Gatschet, the linguist attached to the Bureau of Ethnology, has sent me a letter in reply to one of mine containing remarks on certain Fijian songs. He is good enough to speak all too highly of their value. I find myself gradually tending towards Germany and America rather than towards England in regard to what I write, and I think it probable that most of my notes will go in the future to one of the two countries where science appears to be followed for its own sake and not in the interests of a clique.

Mrs. Waring writes "I had a nice letter from Dr. Tylor who highly appreciates K. and K." . . . .

Lorimer Fison Navuloa, Fiji, July 22, 1881

I was on voyage to Rotuma when I received McLennan's review in *Nature* and the review in *Athenaeum*.

I noticed your exhortation to "read with patience" our friend McLennan's rebuke, and have not found the slightest difficulty in following

your advice. In fact I have read the critique with more than patience—with actual pleasure. It pleased me to note that we have hit hard enough to bring the enemy out in full force—horse, foot, artillery, land transport corps, and all. This shows as the *Australian* remarks that our book has attracted considerable attention. It pleased me also to find myself surviving *totus, teres atque* (alas) *rotundus*—after the astounding broadside had gone rattling by. I cannot find a hit anywhere. Such bombshells as "traveller's mistake," "big blunder," "utterly preposterous" make a great noise but do no harm. They only show how hard the opponent has been hit, like the roaring of the vanquished giant when Jack had whipped his nimble sword through him. It is very gratifying to find the enemy driven to depend upon the questioning of the facts. It shows that they feel the facts to be fatal to them, and *we are sure of our facts*. There has been no haste or carelessness on our part, every important statement has been carefully tested and verified at no little trouble and expense. We have taken nothing on trust. Every new fact as it came in has been subjected to a rigid scrutiny, and where personal inquiry was beyond our reach, trustworthy correspondents have been consulted by letter and in many cases by printed circulars. We have not spared ourselves in any way, and our patience has been its own reward. Finally Mac's critique pleased me by affording me much quiet amusement, at its absurdly "pooh-pooh" style. It is the veteran schoolmaster, spanking his naughty little anthropological boys, who have been impertinent enough to question the wisdom of their teacher.

Howitt is hot for the fray, and has sent me a very hot reply on his part, urging me strongly to fix bayonets and charge. But I have declined for the present. I do not feel sufficiently stirred up and moreover, I do not care to trouble myself to repel an attack which has not succeeded in touching me. I am waiting for Lubbock's fire. When that is delivered, I may perhaps write something in reply to the trio of adversaries. I have no doubt that you are right in your conjecture as to Lang's authorship to the attack in the Saturday. The only doubt I have is as to whether he was helped by Lubbock. If not, probably Sir John will deliver himself before long. We shall have a full opportunity of strengthening our fortifications where they need strengthening when we publish our next work. Howitt's reply to McLennan will probably appear before long. I have sent it back to him with a few notes and just a little prod at our castigator for which I had not the virtue to deny myself.

The information we are gathering is of great interest on two points—firstly establishing more and more firmly the fact of occasional recurrence to *absolute communism* as a distinctly expiatory measure. I need not point

out to you the important significance of this fact. And secondly, descent through males—at least partial—with *chieftainship and hereditary succession in the male line* among the tribes in the southern portion of the Australian continent. The tribes there are evidently fragments of tribes, refugees or war driven remnants, who long ago broke away, or were driven away from communities organized on the Kamilaroi plan, and their present regulations have arisen out of the exigencies of their surroundings. The old Kamilaroi marks are plain upon them and we can see how they have been compelled to abandon the old rules. All this for our next work.

I suppose you have seen Tylor's critique of K. and K. in the *Academy*. It is full friendly, cautious and suggestive. He hits a blot on the fact that class exogamy would not necessarily prevent the cohabitation of father and daughter. But in the first place it is manifest that the relationship between father and daughter is not as close as is that of brother and sister, because the former is a connection by one strain of blood while the latter is by two strains, and secondly such intercourse is guarded against by the *tabu* between father-in-law and son-in-law. When the daughter is given in marriage she has no longer the freedom of her father's house. This is an interesting and instructive fact. The distance between the father-in-law and the son-in-law extends to the son-in-law's wife. I was startled some time ago by a statement made to Howitt by his guest Baron Miklucho Maklay, the Russian savant who has lately returned from a prolonged stay in the Malay Archipelago and New Guinea. He is a naturalist and knows nothing of our line. But he told Howitt that a native had informed him, in some island or other, I forget where, that the father always claimed the *jus primae noctis* from his own daughter on the ground that he who planted the seed has the right to the first fruits. This is an indispensable preliminary to marriage. I was astounded by this statement. It is so directly opposed to the notions of all tribes within my knowledge, that I am at present inclined to reject it *in toto* and so think that the native must have been "selling" the Baron. Such a connection would have been punished by death in Fiji. It would be a reproach upon the active kin so intolerable that nothing but the death of the offender would roll it away.

But setting this aside a movement which prevents brother and sister marriage is certainly not proved to be non-reformatory because it does not necessarily prevent all other in and in marriages. A law may be a good law effecting a real improvement even though supplementary legislation may be required. The prevention of "consanguine" marriage as far as brothers and sisters were concerned was unquestionably a great improvement, and my decided opinion is that the curious restriction on the intercourse of

relatives by marriage gives precisely that supplementary legislation which such a preliminary measure would have required. I am satisfied that the restrictions aforesaid have this intention and that they do not arise from marriage by capture. On the latter hypothesis, how can we account for the precisely similar restriction between brother and sister in Fiji and elsewhere, who may not even look at one another without indecency?

Lorimer Fison Navuloa, Fiji, Aug. 2, 1881

. . . . Both Lang and McLennan are so ludicrously arrogant in tone and the latter at least is so manifestly unfair, that I shall have no scruple in making the prongs as sharp as possible. Take a few instances of his unfairness.

1. He says of the Kurnai that the women call all the males *Yeerung*, and the men call all the women *Djeetgun*, whereas Howitt's statement is that the men call *themselves Yeerung* and the women call *themselves Djeetgun*. But the twist is convenient for his "Systems of Address" theory.

2. He misquotes the Kurnai girl's question to the young man, "Do you eat opossum, kangaroo, blacksnake?" Observe that he puts in Blacksnake, a Kamilaroi totem. According to Howitt p. 202 the girl asks "What does the *Yeerung* eat?" The young fellow replies "He eats so and so," mentioning kangaroo, opossum, and some other game. Unfortunately for Mac's ingenious suggestion the totems of the Kurnai are birds as are those of a Brajirak tribe in their neighborhood. I think it probable that the women never say "*Yeerung*" to the men, and the men never "*Djeetgun*" to the women excepting as an invitation to intercourse of a certain kind. This I infer as probable from Fijian customs during the periods of temporary license.

3. He says "The Australian young man would scarcely ever get a wife except by running away with her. But how did the elderly men get their wives?" If he had read with attention the work he criticises he would have seen that the monopoly of women by the old men is not a Kurnai custom. The Kurnai have the Pairing Family to a certain extent.

4. Mr. Lance's statement is called a "travellers mistake." Lance lived for more than 30 years in the Kamilaroi country employing natives and studying their ways.

5. Mac charges Ridley's mistakes to me. After having heard of the classes from Ridley in 1871, I inquired for seven years before I went to print. I sent hundreds of pages of inquiry and circulars for information and was not too easily satisfied with anything that made for my view to be trusted.

6. It is not true that I made much of the Murdu legend. Mac. makes the astounding audacious statement that the class names "appear to be names merely, and to have no effect on the right of intermarriage." Here he ignores the fact that five specimen sets of classnames are given as well as Ipai which he argues against, that it would be as easy to give 20 sets as to give five, that the intercourse between men and women of the same class is punishable by death and that even a war captive cannot be appropriated by a man of her class. . . . .

7. Arguing in a circle? He cannot grasp the fact that in marriage the *group is the individual*. I considered my definitions to be necessary because of the misleading effect of the terms Uncle, Aunt and Cousin. I venture to say it is unfortunate that we ever used those terms at all in setting forth the Classificatory System; but having them fixed in our mind by our own usage, it would have been a wonder if we had not used them. His remark:

> What is necessary to notice in these demonstrations—and nothing else is necessary—is that while by the hypothesis descent is reckoned through the mother and relationship through the mother, and so far as descent is concerned, the father is a mere nonentity, they all proceed on the hypothesis that the father (who on the hypothesis, would be in each particular case unknown) is as much a relative as the mother. Having said this no more need to be said of Mr. Fison's demonstration.

This remark alone is sufficient to show that he does not understand the distinction between descent through the mother and relationship through the mother, and that he cannot see the significance of the fact that the relationship is of group to group. The "particular father" may be unknown, but his group is known and group relationship includes him together with all the other members of his group.

6. He says of the "Classificatory terms":

> They are the terms always used when persons address one another, there being among those who use the system an invincible objection to the mention of their personal names.

Here again he ignores an adverse fact which has been brought under his notice—viz. that tribes who have no such objection use the system. Moreover he does not understand what the objection is. A man will not mention *his own personal name* but he has no objection to the mention of it by others. This is a very wide-spread savage characteristic.

The point to which I wish to call your special attention is this. Mac says

> In the punaluan family, when the husbands are brothers, the wives *are not* sisters, and when the wives are sisters the husbands *are not* brothers—they are punalua.

Your statement is "These husbands were not probably brothers" (A.S. 428), your reason being that were they so they would most likely be called brothers rather than punalua. Mac states positively what you suggest as probability. As to the general question, I venture to think your general statement to be unfortunate. As far as I have been able to ascertain, the punalua, where males, are tribal brothers and the women, when punalua, are tribal sisters. The terms of relationship are of condition so to speak. If I marry three sisters they are punalua to one another, but they are sisters as well. Our Fiji equivalent is Karua. In my list of 8 Fiji schedules hanging up in my study, I find it used for "my husband's brother's wife" interchangeably with "my sister!" Also for "my wife's sister's husband" interchangeably with my brother." It is also used interchangeably with "my sister" for "my mother's brother's son's wife," a female speaking. Our Rua is the Hawaii Lua and means two. The Punaluan Family consists evidently of a number of tribal brothers having a number of tribal sisters as their common wives. At least this is its ancient form.

Past unpleasant experience has taught me the invariable rule never to accept a new fact even from a native without further inquiry. "Natives will not reveal matters to uninitiated men." I have between forty and fifty correspondents in various parts of Australia and Oceania. Every new fact has to be tested. . . . .

My only object has been to get at facts and it has been a great pleasure to me to see the facts marshalling themselves on your side. But I have never attempted to put a fact out of its place in order to establish your views. Our statements can be tested by others at the present day. We have not written an Antiquarian treatise about things that have passed away and which cannot be recovered. There are Australian tribes on hand today and open to examination.

Lorimer Fison Navuloa, Fiji, August 9, 1881

. . . . When I first read McLennan's critique I saw there was nothing vital in it and I put it away without thinking more about it. But after reading Howitt's reply I took McLennan's out again and read him more carefully, noting his unfairness and dishonesty which I had not cared to note at the first reading. I remarked upon them in my last letter to you. As I wrote my reply I became more and more disgusted with the meanness of his tactics; till when I came to his shamefully dishonest depreciation of gentlemen of good standing and acquirements, I took the button off the foil and ran in upon him. But I don't think that I have been at all savage in my remarks. I wanted to cut out the section about "two naughty

little boys " but my wife would not let me. I ask Howitt to get his wife's opinion likewise. I have great faith in the ladies' perception in such matters, and always consult my wife about a passage concerning which I have doubts as to its effect upon the reader or to its good taste.

His plan has been to depreciate my evidence and to "throw dust in the eyes of the jury" by keeping the civilized notion of relationship before the reader as the only one possible and resolutely ignoring that of the savage. To meet these tactics I have exposed his dishonesty in regard to the evidence and tried to bring in sharp relief the contrasts between the two notions aforesaid. This ignorance of savage custom is truly lamentable in one who is supposed to be an authority upon it. But this ignorance is continually being shown by the "philosophers of the study" who have never been in the field. . . . .

. . . . The only position taken by McL. which looked at all dangerous is connected with the monopoly of women by the men but I think that it is effectually disposed of. . . . .

A. W. Howitt Sale, Aug. 18, 1881

My conscience smites me for having so long left your kind letter of 21st April last unanswered. The cause has been the constant call upon me from distant parts of my large district. You will before this have seen the various reviews in English periodicals by Dr. Tylor and others. Mr. Lang's I think was in the *Saturday Review*. One by Mr. McLennan appeared in *Nature*. I read these all with attention, was pleased with Dr. Tylor's, and felt the most perfect equanimity as to the adverse ones. Mr. McLennan I replied to on some points upon which he was at sea. I learned with regret of his decease and did not send my letter to *Nature*. One thing I am quite clear upon, that the adversaries of the Classificatory System have been hard hit and know it. I can assure you that one of the most pleasing thoughts in connection with my enquiries, which are intensely interesting in themselves is that I am following in your footsteps in the path which you have laid out. The more I work and the more materials I collect the more clearly I see how wonderful a field of inquiry there is here. It is, however, not a little disheartening to feel that there is this immense harvest as it were shedding its grain from overripeness and with sickle in hand one cannot reap it. It is always the way that those who can will not and those who will cannot. I think it will interest you to know the direction in which my work is now tending. I am now gathering materials for a critical comparison of the "tribal organization" and the "communal organization" of the Australians. I think that these materials will enable me *inter alia*

to see more clearly what may have been the causes which produced the change of idea of descent. The "tribe" is composed of "clans" having local positions in the tribal territory; each clan has perpetual succession through the sons who inherit the paternal hunting grounds and bring to the clan their wives—these being of the suitable class name; the "community" is composed of two or more intermarrying segments, and descent is through the mother, the *tribe* and community are coexistent, interpenetrate each other, and are coextensive. I find that in the series of tribes I have information concerning, there is a steady advance of social development, in which there is what I may describe as a correlation of growth in the parts; and that in this progression the *tribal* organization (dependent upon the preponderance of the man's influence) changes least; the changes being rather an intensifying of its marked features; the communal organization changes most even in kind as well as degree, until at the end of the series, *the two organizations* are both dependent upon *the male* alone. In the first instance of the series the totems change in each generation in the clan; in the last instance the totem has male descent, is with two exceptions confined to the clan, and we have then a tribe having in reality, totem clans, male descent, (and in the tribe) an elective chief. What is this but the organization (except the elective chief) which we find in the old Scottish and other clans. Many causes have no doubt tended to bring about change in the idea of descent. Among these I can see these:

1. The belief that the child emanates from the male alone: the Kurnai think any other view so ridiculous as not to be worth thinking of; one clinched the argument the other day by saying in more forcible language than I can write, "No one ever heard of a child with a mother and no father." You will remember here Apollo's argument in the Eumenides in reply to the Erinyes. . . . .

2. The custom of betrothal arising out of a feeling of personal property in the child arising *inter alia* from cause (1).

3. Possibly a feeling of personal ownership in the woman arising not out of betrothal but also out of revolt against the communal right as in elopement;

4. Similar feelings when new conditions all brought about the voluntary or involuntary separation of members of tribe from it—i.e. broken men and their wives. The subject is so difficult that it will require very careful thinking out. One thing is quite clear to me, the change in the line of descent is accompanied by the more marked character of the tribal and the fading away of the communal organization. This is a very bald sketch but may indicate the direction in which I am working. I find that the only

way to get materials is by adding to my number of correspondents who will *work*. I have now nearly 30 who do this more or less. I do not like to think how long it will be before I have collected enough for publication. I am also collecting materials for constructing a map showing the boundaries of the various classes and of the tribal groups. I find that the Kamilaroi classes in various *dialectic forms* extend over probably at least a third of the Australian continent—approximately the northeast third. Round the southern and southeastern edge of the continent a fringe of tribes with advanced organizations in which the class systems are in various stages of decay. In a few places I find what seems to be the Kamilaroi form of *classes* but with male descent. Just lately, I met with a N. S. Wales aborigine from whom I obtained most important particulars. I have subjected him to a severe examination for several days and I find that his account "hangs together" well and coincides in some important points with information I have from distant places. I am now taking steps to check this information by reference to a correspondent in the district in question. To show you the kind of information I am receiving, I give you a précis of my last acquisition. My informant's mother was a Gippsland woman who was taken by the Snowy River Kurnai tribe to the Twofold Bay tribe (see K and K where at the table of clans reference is made to marriage of the Ben Kurnai with Mallagoota). This place is the boundary between the Kurnai and the tribes I now speak of calling themselves Yuin-men. I obtained the complete confidence of this man by speaking to him of the secret ceremonies of Initiation and showing him, of course with proper mystery, a Turndun I possess. He then said "I see you know it all." He regarded me therefore as one of the initiated or as it is expressed in his language a "Gumbangara" i.e. raw-tooth i.e. one who has had a front tooth knocked out at the ceremonies. I now continue my précis:

The Yuin extend from Mallagoota along the coast to Wollongong and inland as far as Boobala and Braidwood. It is divided into two intermarrying subtribes—North men and South men. Each subtribe is a triplet of clans. Each tribe is named from its locality. In this tribe there are four or five dialects having distinct names. There are only *totems* in this tribe, scattered all through it. They do not influence marriage. Descent for boys through father; for the girls through the mother. The totemic names as you will see by and by are less "names" than "magic," what I, think the N. A. Indians call "medicine"—these men call it Io-e-a. My informant, said of his totem (Kangaroo) "It is not a name as much as like a Io-e-a"—"If I saw a Kangaroo running towards me, I should know it was giving me a sign that enemies were near." A wild dog man would get a sign from a wild dog etc., etc. Marriage between the subtribes—or in one subtribe between its clans, but not *in* a clan, as also between one clan and Ben Kurnai—was only permitted when the parties

were not too nearly related—i.e. not "cousins" (with them considered brothers and sisters). Wives obtained by arrangements of fathers at a "fair" or place of barter held at the close of the ceremonies of Initiation—and by actual exchange by brothers of their sisters, under these arrangements. One wife only at a time. Elopement of unmarried girls not infrequent. *Jus primae noctis* practised as to them only. Female captive given to some captives who have no wives. Private wrongs avenged by victims or his male relatives (agnates or cognates) or atoned by an arranged fight. In elopement man fought the girl's male relatives man to man until either he had been knocked down four times, or had knocked down all the girl's men. If couple could remain away until the girl had child, the affair condoned. Girl when caught severely beaten. The tribe governed in each clan by a Headman with other Headmen over the lesser groups. One Chief Headman over the whole. This is so curious that I give my informant's details more fully. The Headman is called Gommera. The Head Gommera is now living in extreme old age. He was according to his account selected as a boy by the then Head Gommera and trained by him in the secrets of the Gommeras. To become a Gommera, it appears to be necessary to be (1) grey-headed, (2) to speak a number of languages, (3) to be able to withstand successfully the attack with spear throwing of from ten to twenty warriors, being armed with a shield only, (4) to be able to exhibit magic as hereafter described. This Head Gommera, it is said, withstood an unusual number and finally through his advanced age became supreme. The Head Gommera consults with other Gommeras whom he summons by messengers. These consult with the elder men of their group. Offenses against tribal law are punished by the Gommeras either by subjecting the offender to ordeal by battle or by ordering his death at the hands of certain warriors. The Head Gommera orders the Initiation (Bunan). His subtribe holds the Bunan and the other subtribe attends. At the Bunan, the whole tribe being represented, certain ceremonies are held at which men, women, and children take part. These are ceremonies of welcome and of presentation of novices to the tribe. The novice is attended by "his wife's brother"—i.e. the brother of one who might be his wife. In other words the novice is initiated by one of the other subtribe. At a certain signal given in the distance out of sight of the women by the tundun (mukthe)—the women and children go away to a distance of several miles under penalty of death. It is at this point that the secret ceremonies commence, to speak of which is unlawful. The Gommeras accompanied by the novices and their "Iambis" procced along a cleared path from the large place of ceremonial to a smaller place. Along this path are, as I am now told, figures of animals moulded in earth. These animals are the totems. At each during ceremonial dances, one of the Gommeras "brings up" (to use my informant's expression) from his inside an article which is the Io-e-a of the totem. Thus a substance like "chalk" is the Io-e-a (medicine) of the Porcupine—in the case of the Brown snake, my informant declares solemnly, that he saw a small brown snake about 12 inches long drop out of the Gommera's mouth. Such a snake is thin and might I think, be held in a large mouth. After the novices have been sufficiently impressed by the

magical powers of the Gommeras the most secret part is reached. Here I am told is a figure of a man in "mud" surrounded by weapons. A dance is held here round this figure with cries of "Daramulun." Here a Gommera brings up what is supposed to be a fearfully powerful Io-e-a like "flesh"—this is the Io-e-a of Daramulun. This Daramulun is the equivalent of the Brewin of the Kurnai. I find him under this name as far out as the Lachlan River and similarly connected with magic, with the magicians and with the initiations. The head Gommera is supposed to communicate with this Daramulun (and he has no wife "because Daramulun has none"—that is this now living Head Gommera). Here I find exactly that which I have foreseen—namely the source of new laws in the tribe—the source being "supernatural" through the mouth of the wizard and the wizard is either a member of the tribal council or the head of that council. In this tribe, from him emanated a new law that babies' noses were no longer to be flattened "because it smothered such a lot." In the Dierie tribe the wizard is in the council of Elders from which emanated the new law which divided the "undivided commune" and "Moora-moora" is the equivalent of "Daramulun." Is it not true that nowhere in history has a great social law been carried out, bringing with it radical change unless under supernatural sanction? From the Dieri legend to the Mormon Revelation—from the earliest to the latest, it has been the same. This is one of the questions on which I am trying to get information—the influence of these magicians in the Australian tribes has been often noted but what the influence has been and is, has not I think been fully seen.

These magical ceremonies having been completed, the novices are taken to a more distant and more retired spot where in a small enclosure, Bunan, one of the front upper teeth of the boy is knocked out by the Gommera. The evening is then spent in theatrical games and pastimes to amuse the novices. For instance, a Kangaroo man represents that animal and is hunted by several men of the Wild Dog totem. Even burlesques are indulged in, for instance a man appears carrying something that is made up to represent a baby. One of the men burlesques the "practise" of one of the Doctors in curing this sick child. The laws relating to the Bunan, to marriage etc. are here laid down to the youngsters by the Gommera, who displays to them his various Io-e-as and explains the power of each. They are told the various kinds of game, they are forbidden to eat during their period of probation, and also shown the Io-e-a belonging to each which will, they are informed, kill them if they disobey the law. Besides this supernatural vengeance they are told that if they eat forbidden food their offense will be seen by the Gommeras in dreams who will then kill them. Finally they are forbidden to reveal one word of what they have heard to child, woman or *whitefellow* under pain of death to them and to all belonging to them. (This was the prohibition at the last Bunan held.) Can one wonder that these secret ceremonies after the sending away of the women and before the theatrical games I have mentioned are scarcely ever revealed? Following this the Gommeras, the Iambis, and the Gumbangaras return to the women's camp, where the boy's mother gives him a blow on the chest and one

on the back with a piece of bark. The boy then and his comrades run off into the bush and there live for months gaining their own living by catching the least nutritious game, until the Gommera considers that they are sufficiently tried and permits them to return as *men*. The Gommera who knocks out the tooth, gums it to the end of a piece of ngulia (the man's waist cord) and carries it to the next neighboring Headman. In the case I have been describing there were three boys admitted and their teeth were carried, first to Wollingong, thence to Sidney, thence to Camden, Lake Bathhurst, Yass, Grundagai and returned to Moniya where the Bunan had been held, by way of Tumut after many months. The tooth was then returned to its former owner. Together with the teeth was sent what may be called the sacred shield of the Yuin tribe. This was in charge of the Head Gommera and always went the round with teeth. I am told that the kindred tribes amongst whom the teeth were carried had each a shield for which great reverence was felt. As my informant expressed himself, "this shield was nearly like Daramulun himself." Let me remind you here of the jagged spear which came round from Omeo to the Kurnai before the last battle of the clans. These tribal tokens of war or ceremonial will make an interesting chapter and will, I think, afford many parallels to classical incidents. The Divine shield of the Yuin reminds me of the naked sword which I think Herodotus records was worshipped by the ancient Scythians. The history of this shield as told me by Iebin, my informant, is so curious that I cannot resist the desire to tell you although the length of my letter might well alarm you. He said "Long ago—long before the old Head Gommera was born, there was a young Gommera of the tribe who was very skillful. As the men heard so much 'blowing' about him they came to try him and he stood out before them all. They all threw showers of spears and boomerangs but he came safe through them all. Then they came up and shook hands with him and made him their Head Gommera. The shield he defended himself with is the one that now goes the rounds. It is a millidu and it is very black with age. It is covered with spear rents and dents of boomerangs." This millidu is a very narrow shield made use of in close fighting with clubs—and not the broader shield used for spear fights.

These are some of the interesting points in my latest acquisition. Some of the details may require amendments but I do not feel any doubt as to the truth of the main facts. They fit in too well with that which I know from other places and my informant stood a severe cross-examination on several days. I see in the above particulars indications of the possible origin in some instances of totem worship, of idolatry and of a priesthood. The knocking out of a tooth I regard as the visible sign of manhood. It is noteworthy that the range of Daramulun and the rounds of the tooth are seemingly the same.

I trust that I have not wearied you with these particulars. But they seemed to me likely to interest you as showing the nature of the evidence

I am gathering. My next step will be to open communication with the Head Wizard. For this purpose I shall most likely send off Ienbin in the aboriginal manner as my messenger and as I have acquired a good deal of influence over him, I hope that he will not only travel the three hundred miles of mountain between me and the Head Wizard, but so favorably report to him of the whitefellow Gommera in Gippsland that he may be induced to return with him. If however the mountain will not come to Mohamet, Mohamet intends to go to the mountain. . . . .

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PREHISTORIC NORTH AMERICAN BASKETRY TECHNIQUES AND MODERN DISTRIBUTIONS[1]

By GENE WELTFISH

THE study of American Indian basketry techniques, with a view to pointing out historical implications, needs little justification in view of the known antiquity of the Basket-Maker culture. Largely through the efforts of Kidder and Guernsey this has been established as the earliest identifiable culture in the Southwest.[2] While the modern Pueblo Indians and their ancestors in this region are skilled potters, these more ancient inhabitants of the region are noteworthy for the fineness of their basketry

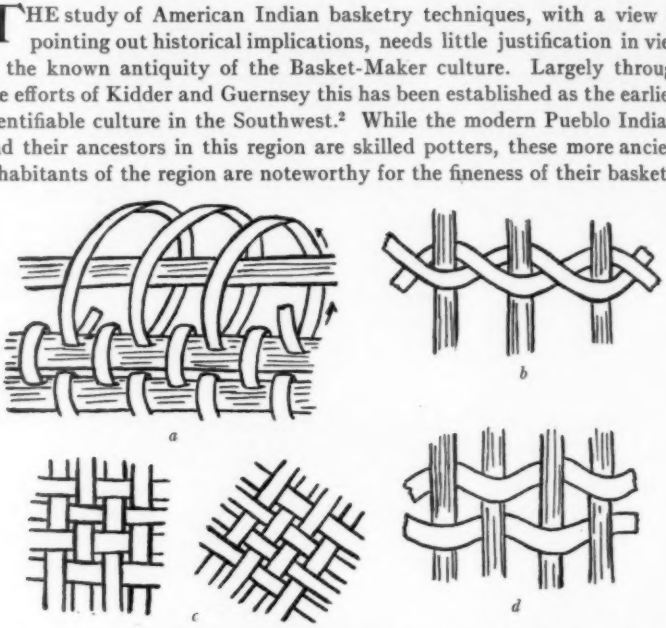

FIG. 1. Types of basketry techniques. *a*, coiling; *b*, twining; *c*, plaiting; *d*, wicker.

products and the absence of a true pottery art. It is thus evident that this basketry art, which flourishes in comparable form among many of our aboriginal groups today, is very old in North America.

In the comparison between prehistoric basketry techniques and modern distribution of techniques, the distinction between prehistoric and modern must for the present remain a broad and general one, since for most of

[1] Read at the annual meeting of the American Anthropological Association, New York City, December 28, 1928.

[2] Guernsey and Kidder, 3, 1921. Kidder gives an estimated date of 2000 to 1500 B.C., 119, 1924.

the prehistoric material with the exception of the Basket-Maker neither relative nor absolute chronologies are as yet available. In general, all material referred to as prehistoric is undoubtedly pre-Columbian.

The basketry with which we shall deal falls into three general technical types,—the coiled, the twined, and the plaited. These differ in principle, viz., in the position and relation of the active and passive elements, the warp and the weft.[3] In coiling, we have a horizontal warp sewn with a vertical weft thread; in twining, we have a vertical warp sewn with a horizontal weft thread; in plaiting, the distinction between warp and weft does not hold, since both elements are usually equal in degree of activity and proportions: the position of the elements in plaiting is either horizontal-vertical or diagonal. On the basis of this classification, the technique called wicker[4] would come within the same type as twining.

I. Modern Basketry Areas

The distribution of modern American basketry can be characterized by referring it to ten basketry areas.[5] (See map.) Along the west coast of the continent four of these areas occur:

1. Northwest coast.—In the Northwest coast area the baskets are finely twined and cylindrical in shape. In addition to twined ware, the southern group make baskets of cedar bark in checker-plaiting and twilled-plaiting.

The northern group includes the Aleut, Tlingit, and Haida. Tlingit baskets are decorated in false embroidery.

The southern group includes the Tsimshian, Kwakiutl, Bella Coola, and Nootka.

[3] There are two principles involved in this descriptive fact: first, the relation of the warp and weft to each other; and second, the position of these elements with respect to the worker during manufacture. Statements covering both these principles are indispensable to complete description.

[4] Mason, 228, 1902.

[5] This classification was made on the basis of museum collections of basketry. In preparing the discussion for publication, I have added bibliographic notes.

This museum study of modern basketry and ancient basketry remains has taken me to the exhibitions and store rooms of a number of museums. For their courtesy and cooperation when I visited their museums I am particularly indebted to the staff members of The American Museum of Natural History, New York; Museum of the American Indian, Heye Foundation, New York; Peabody Museum of American Archaeology and Ethnology, Cambridge, Mass.; Brooklyn Museum, Brooklyn, New York; University of Pennsylvania Museum, Philadelphia, Pa.; U. S. National Museum, Washington, D. C.; Field Museum of Natural History, Chicago, Ill.; University of California Museum, San Francisco, Calif.; Los Angeles Museum, Exposition Park, Los Angeles, Calif.; Southwest Museum, Los Angeles, Calif.; and the San Diego Museum, San Diego, Calif.

2. Northern California-Puget sound.—In the northern California-Puget sound area the baskets are made primarily in overlay twining. The Makah on the northernmost coast of Washington use wrapped twining very extensively. In the northern part of this area this technique and false embroidery are often used on bags and soft baskets for the decorated portion.

The northern part of the area includes the work of the Clallam, Quinaielt, Tillamook, Skokomish, Wasco, Wishram, Umatilla, Cayuse, Wallawalla, Nez Percés, and Cowlitz.

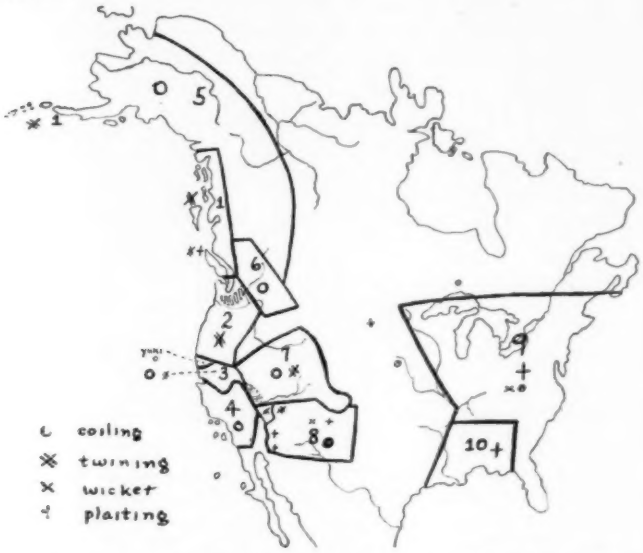

FIG. 2. Basketry areas of North America. The peoples of area 2, indicated by vertical shading, also now make imbricated coiled ware such as is found in area 6. The people of area 7 indicated by horizontal shading, make coiled ware which might be classed with area 3.

South of these the western group includes the Yurok, Karok, and Hupa, the Wiyot, Wailaki, and Shasta. According to Kroeber, the Athapascan Tolowa, Lassik, and Sinkyone (as well as the extinct Chimariko), had twined basketry of the northwestern California type.[6] In the eastern north California group we have the Klamath-Modoc, Northern Wintun, Pit River groups (especially the Achomawi and Atsugewi), and the Yana.

[6] Kroeber, 127, 144, 147, 111, 1925.

3, 4. Central California and south California.—The central California and south California areas are both characterized by the predominance of coiled ware. Twining in twilled and open-work form is used for objects of everyday use. The Pomo, in the central area, make use of a variety of twined weaves. The distinguishing features of the coiling of these two areas are differences in the technique which I shall describe later.

The Pomo, Maidu, Miwok, and Washo are the chief central Californian basket-making groups. The coiled ware of the Yuki is technically different from that of these other groups. "Coast Yuki basketry was like that of the Kato and Yuki, it is said, though no examples have been preserved. The Usal Athabascan (Sinkyone) are said by the Coast Yuki to have made coiled baskets of the same kind. It is likely, however, that as among the Wailaki, and in another part of the state among the Yana, this ware was only sporadically manufactured by them alongside of the standard forms in twining."[7]

Included in the south California area are the Yokuts and Mission, Chemehuevi, Chumash and Salinan. The Salinan also make twined work.[8]

Immediately inland we have again four areas:

5. Mackenzie.—The baskets of the Mackenzie region are rudely coiled.

In this group is included the work attributed to the Athapascan Tinné, that of the Athapascan at Anvik, Alaska, and of the Alaskan Eskimo.

6. Salish and Sahaptin.—To the south among the Salish and Sahaptin tribes there is intensive development of coiling with imbrication.

Most of the imbricated basketry now available is of four types, the Chilcotin (Tsilkotin), Thompson, Lillooet and Klickitat.[9]

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[7] Kroeber, 214, 1925.

[8] According to J. A. Mason, 1912, it is probable that twined ware, in greater abundance and of finer quality than is made in the south California area today, was characteristic of the coast tribes south of San Francisco. The only example of Costanoan basketry (illustrated in J. A. Mason, pl. 36, fig. 2) is of twilled twining of fine quality and peculiar in weave and decoration. See also Kroeber, 561, 1925, plate 53. Of Costanoan basketry, J. A. Mason writes: "According to Petit-Thouars, Voyage autour du Monde, 2:115, the baskets at Monterey were decorated with colors, feathers and pearl beads. It is probable that their basketry most closely resembled that of the Miwok." Nothing is known of the basketry of the Esselen.

[9] According to Teit, 487, 1909, "coiled basketry was formerly made by all or nearly all the Shuswap bands and was of the same kind as that made by the Chilcotin, Lillooet and Thompson Indians."

An historical treatment of the present and past distribution of basketry in this region will be found in Boas, 1928. The following are excerpts from this treatment: Page 383, "The area in which imbricated basketry is made stretches along the eastern side of the Cascade range, beginning with the Chilcotin and following south through the territory of the Thompson as far as Wenatchi and Cowlitz."

7. Basin.—Among the Shoshonean tribes of the Basin crudely finished coiled baskets and twilled-twined ware, for the most part either undecorated or decorated with very simple designs, are the features.

These include the Paviotso, Paiute, Bannock, Ft. Hall Shoshoni, and Ute groups.

8. Southwest.—In the Southwest, finely finished coiled ware is the predominant product. In addition there are more limited and sporadic occurrences of other weaves, as for example the wickerwork of the Hopi and Zuñi, the twilled plaiting of the Hopi, Zuñi, Rio Grande Pueblos, the Pima and the Papago, and the plain and twilled twining of the Havasupai and the Apache groups.

From the standpoint of basketry, the Southwest area includes, in addition to the pueblos, the Havasupai, the San Carlos,[10] Jicarilla and Mescalero Apache, the Navaho, Pima,[11] and Papago.

"All of the *in crior Salish* tribes of British Columbia once made coiled basketry of cedar or spruce-root—the Upper and Lower Lillooet, the Upper and Lower Thompson, the Shuswap, the Lake (of the Okanagon group) and the Okanagon proper. The last were the least productive. The Lake and Okanagon as well as the Shuswap make almost no coiled baskets at the present time, but the Lillooet and Thompson probably manufacture as many now as they ever did. Of the *Athapascan* group of southern British Columbia, the Chilcotin are the only people who make coiled ware."

Coast Salish: "On the coast only the Sechelt, Squamish, Stalo of Lower Fraser, the Nootsak, the tribes of Puget Sound, and the Cowlitz, all of whom live not far from the Lillooet and Thompson and their southern neighbors make coiled baskets of which they produce no small amount at the present day. The interior people say that although these tribes had access to the very best material in their own country none of them made coiled ware in old times, but learned from the Thompson and Lillooet."

Sahaptin (p. 137): "According to the Cowlitz and Nisqualli, the Klickitat, when they came into their country, found the other tribes of the region well versed in basket-making. They say that the Klickitat formerly resembled the Yakima in that they did not make baskets .... only when they learned the art from the Cowlitz and Nisqualli were they able to manufacture plenty for their own use."

Page 136: "From this information, as well as from that derived from other localities, it would appear that the original home of this type of coiled work lay in the Cascade region. The Salish antedated the other tribes in this manufacture, having produced the ware before the arrival of the Klickitat west of the Cascades, a statement which is confirmed by the distribution of the industry."

Page 135: "The interior Salish were not the only people, however, who produced coiled work in the early days. They state that the Snake, Nez Percés and some Kootenai knew the technique, but not the Blackfeet, who formerly bought their baskets from the Flathead and Tunā' xe."

[10] The work of the White Mountain Apache may be grouped with that of the San Carlos. One or two examples of Chiricahua Apache work that I have seen are also of this type. I have seen no examples of work attributed to the Mimbreños and Tonto Apache.

[11] Several baskets attributed to the Maricopa resemble Pima work in technique, but the

Thus, eight of the basketry areas which can be distinguished technically, occur in the western third of North America. In the rest of the continent there are two areas:

9. Algonquian (Northeast).—In the Algonquian region, baskets are made of sweet-grass and splint in coiling, wicker, and checker plaiting techniques. While it is not possible without full archaeological evidence to determine what features of modern Algonquian basketry are due to white contact, it is probable that the influence of European culture has been an important factor in the history of the basketry as in the other phases of eastern native culture.

The northernmost groups in the east, the Naskapi and Montagnais, are not basket-makers (bark baskets, however, are in use here).

The Abnaki, Micmac, and New England groups make splint basketry in plaited and wicker techniques and some wickerwork in sweet-grass and splints.

South of these, the Iroquois make twilled and checker-plaited splint baskets, twining—especially in corn-husk—and an openwork plaited technique with two diagonal elements and a horizontal element, similar to chair caning. This is a technique also found on snowshoes.

West of the Iroquois, the Central Algonquian group includes the Ojibway and the Chippewa who are a northern branch of the Ojibway, the Ottawa, Menomini, Sauk and Fox, Potawatomi, Peoria, Illinois, Kickapoo, Miami, Piankashaw, and Shawnee. Specimens are not available from all of these groups, some being now extinct. Splint basketry in checker and twilled plaiting exists for most of these groups; the sweet-grass coiled ware is attributed to the Ojibway, Chippewa, and Menomini. In the Museum of the American Indian, Heye Foundation, there is one coiled specimen from the Miami and a twined specimen from the Kickapoo.

10. Southeast.—In the southeastern area the baskets are of cane splints chiefly in the twilled-plaiting technique.[12]

These baskets are made by Cherokee, Chickasaw, Choctaw, Alibamu, Koasati, Attacapa, Chitimacha, and other groups in this region.

In contrast to this western and eastern distribution of basketry, the central part of the continent, taking in the region from Hudson's Bay through the Mississippi to the Gulf, shows practically no basketry.

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stitches are spaced further apart so that the foundation element shows between the stitches; in contrast to Pima baskets these examples are undecorated or are rubbed on the surface with a pinkish paint after the basket is finished.

[12] Speck, 1920, treats the whole eastern distribution of cane and splint basketry.

In this region of the *non-use of basketry*,[13] the coiled gambling trays collected from most of the Plains tribes furnish an exception. These also occur among the Caddoan Pawnee and Arikara, by whom they are made; the Pawnee, Arikara, and other Caddoans also made twilled carrying-baskets. These were also found among the Hidatsa.

II. Coiling and its Distribution

In considering the distribution of each of the three types of basketry technique in North America—coiling, twining, and plaiting—the technique of coiling will be the most extensively treated. This is justified by two considerations,—the widespread use of coiling in ancient and modern basketry; and, of still greater importance for comparative technical study, the possibility of analyzing the technique into a number of mechanically independent traits.

a *b*

Fig. 3. *a*, counter-clockwise and *b*, clockwise spirals.

Coiling occurs in six of the basketry areas characterized above. These are: (3) and (4) central and south California; (5) Mackenzie; (6) Salish; (7) Basin; and (8) Southwest. Of these, the south California groups make coiled ware almost exclusively. Coiled ware is preponderant in central California, in the Salish area, and in the Southwest. Except for the coiled plaques of the Hopi, the modern Pueblo groups do not make coiled basketry. This preponderance of coiled ware occurs in other groups I have included in the Southwest area. Among the Basin Shoshoneans, coiling and twilled-twining are equally stressed. In the east and central part of the continent, sporadic examples of coiled ware occur in the Algonquian and Plains areas.

Four features of the coiled technique are of widespread comparative value,—the direction in which the work proceeds, the surface from which the basket is worked, the method of sewing, and the foundation element.

As practically all coiled basketry is built in a continuous spiral from bottom to mouth, the spiral may progress either clockwise or counter-

[13] An exceptional basket was collected by Skinner, 129, 1911, from the Northern Salteaux at Fort Osnaburgh, on Lake St. Joseph. This is made in *non-spiral* coiling. Dr. Ronald Olson reports having collected two baskets in this technique from British Columbia.

clockwise. Conceiving the mouth of the basket as a clock, the stub of the last course of coiling reveals the clockwise or counter-clockwise direction in which the coiling proceeded. This spiral may also be observed on the inside[14] bottom of the basket. If necessary, the direction of the spiral may be calculated on any part of the body of the basket by following one course of coiling to the completion of its circuit.

The significance of determining the direction in which the spiral progresses is not in the descriptive fact itself, but in its interpretation as a motor habit of the basket-maker. For the purpose of this interpretation, the position of the basket with respect to the worker during manufacture must be taken into account. The woman may work with the concave or the convex surface facing her. When the concave surface is the workside, the far edge of the circumference is worked; when the convex surface is the workside, the near edge of the circumference is worked.[15] The basket is revolved circularly so that the hands of the worker move in a horizontal

a *b*

FIG. 4. *a*, a clockwise spiral worked from the concave surface; *b*, clockwise spiral worked from the convex surface.

line, rather than in a circle. From the point of view of the worker, the coiling may proceed toward her right or toward her left. In order to translate the direction of the spiral into these terms, we must ascertain which was the work surface,[16] the concave or the convex. Thus while the sur-

[14] Examining the bottom of a basket on the outer or convex surface, the watch-spring spiral proceeds in a direction opposite to that of the rim. In describing the direction of work, especially in fragments or broken baskets, this factor should be taken into account.

[15] This agreement of surface worked and edge worked is true of North American plaiting and twining as well as coiling.

Basket-making illustrating concave work surface worked at the far edge is shown in: Kissell, 188, fig. 38; 210–212, figs. 53–58 (Pima coiling), 1916; Spier, 130, fig. 12 (Havasupai twining), 1928; Mason, pl. 197 (Mission coiling); pl. 200 (Havasupai coiling), 1902.

Basket-making illustrating convex work surface worked at the near edge of the circumference is shown in: Spier, 130, fig. 13 (Havasupai twining), 1928; Boas, pl. 2 (Thompson coiling), 1928; Mason, pl. 12 (Pomo twining), pl. 13 (Tlingit twining), pl. 120 (Abnaki plaiting), pl. 121 (Chippewa plaiting), pl. 171 (Hupa twining), pl. 172 (Wintun twining), pl. 198 (Saboba coiling), pl. 215 (Hopi coiling), pl. 235 (Pima coiling), 1928.

[16] The work surface usually has a better finished and more even appearance than the non-work surface. Natives are inclined to designate this work surface as the "good side."

face worked is a feature which is mechanically independent of the direction of work, the latter feature cannot be determined until we can determine which is the work surface.

A clockwise spiral worked from the concave surface and a clockwise spiral worked from the convex surface represent different directions of work. This follows from the relation between the surface worked and the edge of the circumference worked, as above explained. See also figure 4.

Each course of coiling consists of a filler or foundation element which proceeds horizontally, and the binding stitches which appear on the surface

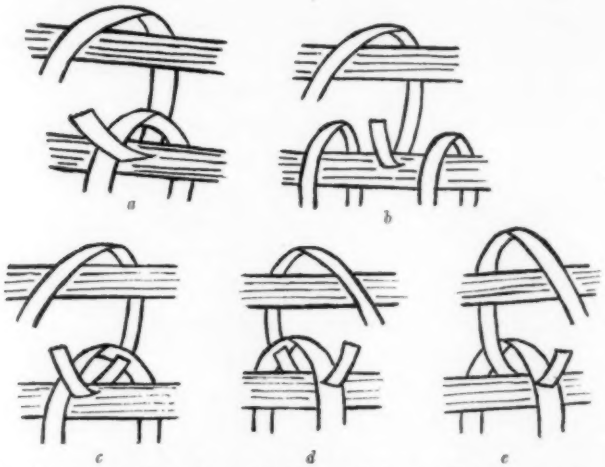

FIG. 5. *a*, interlocking stitches; *b*, non-interlocking stitches; *c*, split stitches on non-work surface; *d*, split stitches on work surface and non-work surface; *e*, split stitches on work surface.

and are vertical. The purpose of the binding stitch is to hold the filler together and to attach it to the completed course of coiling below. The new binding stitches may be inserted into the completed course of coiling in three ways: (1) the stitches of the new superimposed row either split the stitches of the course below; (2) they interlock with them; or (3) they do not interlock with them.[17]

[17] As can be observed from the illustrations, the new stitch always includes some of the foundation element of the course below, and in the case of non-interlocking stitches attaches the new coil to the one below by means of the foundation element alone.

Mason,[18] in his analysis of coiling, considers the interlocking of stitches a basic feature of all coiling; he includes split stitches in his conception of interlocking, and his treatment would imply that the occurrence of non-interlocking stitches in coiled work is exceptional. I believe Mason's interest in the netting techniques (coiling without foundation) as the prob-

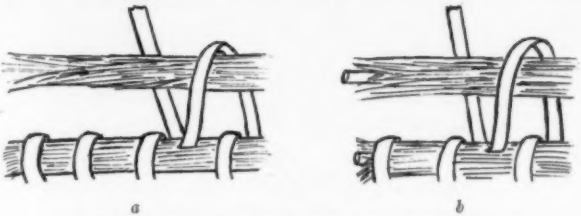

FIG. 6. Type 1. *a*, multiple foundation; *b*, rod surrounded by bundle.

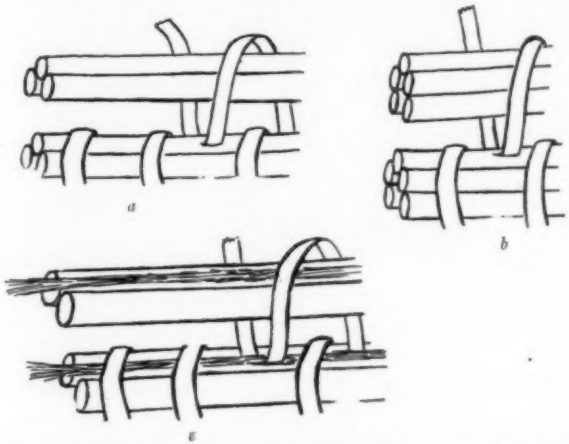

FIG. 7. Type 2. *a*, three-rod triangular; *b*, five-rod triangular; *c*, two-rod and bundle triangular.

able origin of coiling was the basis for this emphasis upon interlocking stitches. Logically, it is hardly necessary to find a unit origin for the coiling technique. As the pictures of birch-bark vessels in Mason[19] indicate,

[18] Mason, 244, 245, 1902. Kidder and Guernsey, 169, 212, 1919, remark upon the presence of non-interlocking stitches in Basket-Maker material and the contradiction this offers to Mason's definition.

[19] Mason, 277, 1902.

edge-binding and the binding of sticks or bunches of grass, as well as the netting technique, might well have given rise to the technique of coiled basketry. Whatever might have been the origins of the technique, the actual distribution of the three manners of sewing indicates that inter-

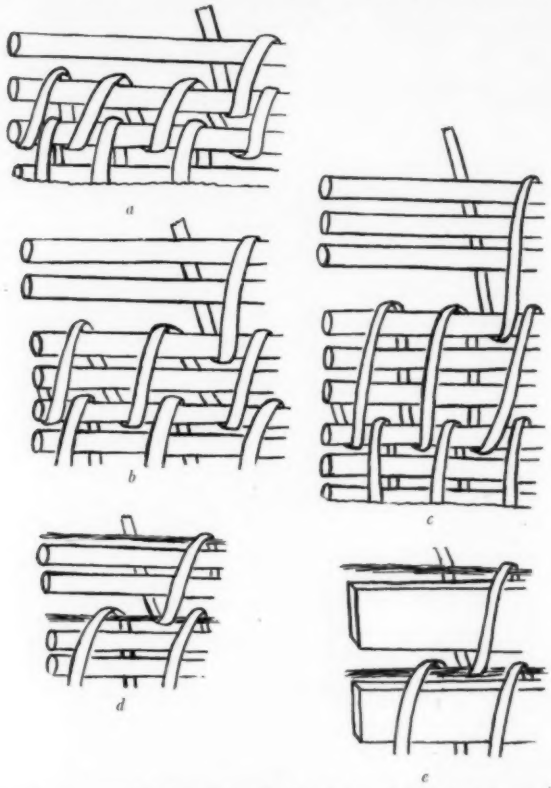

FIG. 8. Type 3. *a*, one-rod; *b*, two-rod vertical; *c*, three-rod vertical; *d*, two-rod and bundle vertical; *e*, slat and bundle vertical.

locking of stitches is, if anything, a more exceptional feature in its appearance than non-interlocking. It seems to me, therefore, reasonable to use these three distinctions as independent in technical descriptions and comparisons, rather than to identify any two of them as equivalent.

The foundation element contained within the stitches is, in North America, of three types:[20] first, a bundle of grass or splints (multiple foundation); second, three rods in triangular form, so that the cross-section of the course of coiling would form a triangle with apex pointing upward (sometimes a bunch of grass or a splint being substituted for the top rod). The third type has a one, two, or three-rod foundation placed one on top of the other in a vertical position in the height of the coil, making a wide course of coiling on the surface. Some of the variants of these three types are illustrated (figs. 6, 7, 8).

From the standpoint of these technical characteristics, the coiled ware found in the six areas mentioned can be differentiated as follows: The northernmost occurrence of coiling as a predominant technique in California is among the Yuki. The Wailaki north of them use coiling and twining equally. Sporadic occurrences of coiling among tribes north of this group have been reported.[21] The Yuki do not belong technically to the central California area and may be mentioned separately. The direction of the coil is counter-clockwise, convex work surface, toward the right of the worker. The stitches do not interlock. The Yuki use one-rod surrounded by splints, two-rod and splint, and the three-rod triangular foundations.[22]

In the work of the central California groups the coil proceeds in a clockwise direction, the convex work surface is used and the work proceeds toward the left of the worker. With regard to the manner of sewing, the Pomo and Miwok interlock their stitches, the Maidu and Washo split their stitches on the inner surface. The three-rod triangular foundation is used by all the tribes; in addition, the one-rod foundation is used by the Pomo and Miwok, and very occasionally by the Washo, but never by the Maidu.

In the south California area the direction of the coiling is either clockwise or counter-clockwise. In jar shapes with shoulder and constricted neck, or in globular shapes, the direction is counter-clockwise, the work surface the convex side, and the direction of work toward the right of the worker. In flat tray-like shapes, as well as in shallow bowls, the direction of the coiling is clockwise, the work surface the concave side, and the direction of work toward the right of the worker. In the deep, truncated

[20] I have made no attempt here, however, to present an exhaustive list of all the variations of these types that can occur.

[21] See the discussion under areas 3, 4, p. 457.

[22] The Yuki have been subject to some influence from the Pomo in their basketry technique, but it is significant that their basketry art is still distinct. Of ethnological importance in this connection, are the facts that they are also distinctive in speech and physical type. See Kroeber, 159, 169, 1925.

cone-shapes usually characteristic of burden baskets and hats in this area, the direction of the coil is either clockwise with concave work surface, or counter-clockwise with convex work surface, and in both cases the direction of the work is toward the right of the worker.[23] While we have a variation in this area of the direction of the coil and the work surface used, the actual direction of work is always toward the right of the worker.[24]

The stitches in south California coiled ware are non-interlocking. Looking at the surface, the stitches on these baskets show a decided leftward lean, which is also noticeable on Salish coiled ware, and is probably a concomitant of work toward the right of the worker combined with non-interlocking stitches or those split both inside and out. In both cases the binding stitch passes through the completed course of coiling at right angles to it. Following this principle, a right lean would be expected in non-interlocking stitches toward the left of the worker, but this lean is not so marked.

In this area a multiple grass foundation element is used. (Exceptions are: the Chumash, who use three reeds in triangular form; and the Chemehuevi, who use three rods in triangular form.)

Chemehuevi basketry is unique in North America in the technical fact that within a well-defined basketry style, direction of work both toward the right and toward the left of the worker occurs. Right and left directions of work occur in both the general types of Chemehuevi baskets, flat ware which is worked on the concave surface and globular and bottle shapes which are worked on the convex surface. Kroeber early drew attention to this fact of the two directions of work in Chemehuevi basketry.[25]

In considering this anomaly of Chemehuevi basketry technique, it should be remembered that for the individual basket-maker it is improbable that weaving is done in both directions. The methods of handling, for economy of motion and control of technique, become habitual, and any deviation is likely to be inconvenient and clumsy. The evidence on distribution of techniques presented in this paper supports this contention; for not only is the direction of work consistent within any tribe, but also it is uniform throughout wide contiguous areas. Variation in direction of work within a tribe which may occur, is usually numerically insignificant and can probably be attributed to the number of left-handed basket-makers normal to that group. Among the Chemehuevi, however, the proportion of the variant direction is

[23] These deep, truncated, cone-shaped baskets are made in the coiled technique by the Maidu, Miwok, and Washo to the north, the direction of the coil being consistently clockwise, the work surface convex side in all cases, and the direction of work toward the left of the worker. In these groups this is the most characteristic coiled shape.

[24] As noted below, the Chemehuevi are exceptional in this feature.

[25] Kroeber, 50, footnote 16a, 1908.

too great to be attributed to this factor. 1:5—1:6 is the proportion of work toward the left to that toward the right.[26]

While in Los Angeles in November, 1929, I was fortunate in finding a collection of over two thousand Chemehuevi baskets in the Los Angeles Museum, which I was able to examine through the courtesy of Mr. Arthur Woodward. Almost the entire collection was tabulated for certain outstanding traits, and what seemed to me important results appeared as a result of the counting.

The baskets were first sorted as to direction of work. Disregarding all other characteristics, the numbers in the two directions of work, tended toward a proportion of 1:6.

This proportion was not consistent, however, for all shapes found in the collection. Three shapes showed great disproportion to the average.

The first of these, shallow trays ranging from 9 to 20 inches in diameter, when tabulated were found to include eighty-five worked toward the left of the worker, and one hundred sixty-seven worked toward the right, a proportion of over 1:2 as against the expected 1:6. Among baskets of this shape two were found which almost certainly had been made by the San Carlos Apache. San Carlos Apache trays are worked on the concave surface toward the left of the worker, and in this fact agree with the eighty-five Chemehuevi baskets. In addition, Chemehuevi baskets share with the Apache the three-rod triangular foundation, the use of wood instead of reed sewing-thread, and the use of *martynia* as the black thread for design and rim.

The second shape is that of the Yokuts burden basket, a deep trapezoidal form. There were sixteen of these worked on the concave work surface and toward the worker's right, while there were none of this shape in the other direction of work. A fact to be associated with this, is that in a comparison of deeper bowl shapes practically all which can be said to have a decided bend at the base, such as is characteristic of Yokuts work, occurred with right direction of work.

The third shape is that of Yokuts "bottleneck" baskets, of which there were thirteen in right direction of work, and none worked toward the left.

The above two shapes, the "bottleneck" and the burden basket, as made by the Chemehuevi, agree with Yokuts and other south California work not only in shape, but in the direction of work, which for south California is consistently to the right.

The suggestions of these technical facts seem clear. Since experience with other basket-making groups makes it probable, as above explained, that the same basket-maker would hardly produce finely finished coiled baskets, working at one time toward the left and at another toward the right, the Chemehuevi basketry should probably be associated with two groups of basket-makers, those working toward the

[26] Wardle, 296, 1912, discusses a Tlingit basket which is exceptional in direction of work and other technical features, and calls attention to the fact that the exceptional direction of work, lean of stitch and clumsiness of execution is attributable to "left-handed" workmanship. This suggests that in addition to numerical facts we should expect inferior workmanship in "left-handed" baskets, which, however, is not found in Chemehuevi baskets worked in the exceptional direction.

right and those working toward the left. Whether these are scattered families within the group or are geographically distinct is a matter of conjecture. From the evidence of the basketry, I feel that an east group working toward the left in contact with the San Carlos Apache, and a west group working toward the right in contact with south Californian groups might be postulated.

Such a postulated group of western Chemehuevi basket-makers should, however, not be confused with the Kawaiisu, a Chemehuevi-speaking people of California, whose work is distinct. Those baskets identified as definitely Kawaiisu[27] were all worked toward the right, and in materials and forms as well as direction of work could be identified with the south California group.

In the Mackenzie-Alaska area, the Eskimo coil is counter-clockwise, convex workside, toward the right of the worker. They split and interlock their stitches, and use a single-rod and multiple-grass foundation. The work attributed to the Tinné has the same features, but has only a single-rod foundation.

A coiled ware of rawhide, without foundation, with twisted, interlocking stitches, illustrated by Mason,[28] might here be mentioned. This, however, is of the bag or wallet rather than of the basket class of weaving. This distinction is chiefly a classificatory one, and as usual, the classes often overlap. The distinction, however, has some basis in manufacture, since stiff baskets are woven from the bottom upward, while soft bags and wallets are generally suspended and progress from the top downward. On the Northwest coast, where the warps of twined baskets are soft and fine, the baskets are often woven suspended with mouth down (Aleut, Haida).

In the Salish area the direction of work is counter-clockwise, convex work surface, worked toward the right of the worker. The stitches are split through and through, both on the inner and outer surface. (Among the Chilcotin the stitches are more evenly bifurcated and the coils are finer, so that the surface presents a more regularly stitched appearance.[29]) In this area a multiple foundation of a bundle of splints is used with the exception of the Lillooet, who use a slat-and-bundle-vertical foundation, producing a wide, flat coil. In Salish work the stitches lean rather decidedly toward the left as one looks at the surface. Baskets are decorated by beading and imbrication (see fig. 9).

[27] Mr. T. McCown discussed with me the baskets he had collected among the Kawaiisu during the summer of 1929. Later I examined these at the University of California Museum.

[28] Mason, plate 129, Dog Rib Indian game bag, 1902.

[29] Teit, fig. 217, p. 490, 1909, notes that the example of Shuswap basketry in the American Museum of Natural History (specimen 16/9280) has split stitches on the outside only, and that the same method is found in Athapascan baskets. It is not certain whether work of the Chilcotin is referred to. Those I examined in the Brooklyn Museum had stitches split both inside and out.

In the Basin Shoshone area are the Paviotso or Northern Paiute and the Southern Paiute groups. The Paviotso include the groups found at the Walker River, Pyramid Lake, and Stillwater reservations in Nevada. The work of the Paviotso is decidedly coarser than that of the Southern Paiute groups, and is irregular in technical style. Two coiled baskets collected by M. R. Harrington from the Walker River reservation[30] are coiled clockwise, convex work surface, toward the worker's left, with three-rod triangular foundation. In the first specimen the stitches are irregularly split, in the second they are non-interlocking. From the Pyramid Lake reservation, those baskets worked toward the worker's left have interlocking stitches, while

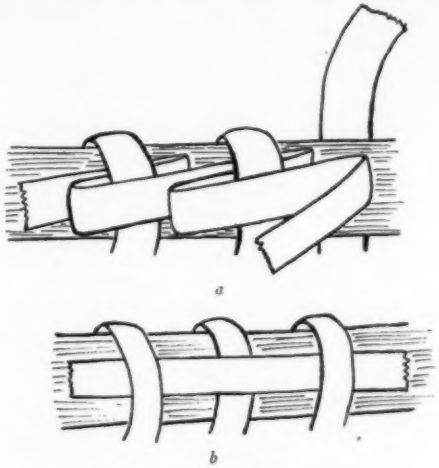

FIG. 9. *a*, imbrication; *b*, beading.

those worked toward the worker's right have non-interlocking stitches, three-rod triangular and one-rod foundations being used. Specimens from the Stillwater reservation show both clockwise and counter-clockwise coiling, convex work surface, toward the left or toward the right of the worker, using a single-rod foundation only. Examples of both interlocking and non-interlocking stitches are found for both directions of work.

Of the Southern Paiute groups, the basketry of the Moapa is most fully represented in collections. This is coiled in a clockwise direction, convex work side, toward the left of the worker; the stitches interlock, and the

[30] Heye 13/4420, 13/4223.

foundation is three-rod triangular. The basketry of the Kaibab Paiute resembles that of the Ute.

The Ute baskets are coarse in texture and are coiled in a clockwise direction, convex work surface, toward the left of the worker, with the stitches split on the inside. A two-rod and three-rod vertical foundation is used. The basketry of the Bannock and the Shoshoni also resembles that of the Ute. The top rod is often split by the binding stitch of the course above.

In the coiled work of the Southwest, trays are coiled in a counter-clockwise direction, concave work surface; while jars are coiled in a clockwise direction, convex work surface. Both types are made toward the worker's left. The stitches in all cases are non-interlocking. The San Carlos and Jicarilla[31] Apache and the Havasupai use a three-rod triangular foundation; the Navaho a two-rod and bundle triangular; the Hopi a multiple-grass foundation; the Pima and Papago a multiple-reed foundation; and the Mescalero Apache a two-rod and bundle vertical or slat and bundle-vertical foundation.

Basketry called Navaho is of two types, that most generally in use today, and an older variety of softer texture. The modern type is made by the Ute especially for Navaho use, the Navaho having discontinued the manufacture of baskets. This Ute type has as a foundation three heavy rods in triangular form. The Ute do not make this type for their own use. The older type has a two-rod and bundle triangular foundation and was made by the Navaho themselves. This is the only basketry of modern times which in all technical details duplicates the work of the ancient Basket-Makers.

In the area of non-basketry, one coiled cylindrical basket from the Northern Saulteaux[32] is made in non-spiral coiling, each course being finished at the end of the circuit. The basket has a one-rod foundation. The stitches are sewn far apart so that the foundation rod can be seen in the interval between the stitches. The sewing appears like a series of radials emanating from the bottom center up along the sides to the rim. Occurring in this area are the small, shallow coiled gambling trays of the Plains. Specimens have been reported from the Cheyenne, Arapaho, Kiowa and Comanche, the Arikara, Pawnee and Mandan. These are of two types, one having a foundation of one or more rods and splints vertically, and sewn either with yucca leaves or wood sewing-thread. These are coiled counter-clockwise, concave work side, toward the left of the worker. The

[31] Sometimes a five-rod triangular foundation is found in the work of this group.

[32] Now in the American Museum of Natural History. See Skinner, 129, 1911. The specimen is said to come from Osnaburgh on Lake St. Joseph. See also note 13, above.

second type is that of the Arikara and Pawnee, and perhaps the Mandan, having a single willow-rod foundation and sewn with heavy willow sewing-thread. In some cases this thread appears as if lacquered, but it is not treated artificially in any way. This type is coiled clockwise, concave work side, and is worked toward the right of the worker. The first type is likely to have split stitches, while the second usually has interlocking stitches.

From the Algonquian area two coiled baskets are of special interest, one from the Miami, and a set of five flat circular discs, about four inches in diameter, from the Chippewa.[33] The Miami basket is coiled counter-clockwise, concave work side, toward the left of the worker. Each coil is about three-quarters of an inch thick and is sewn with bark thread from one-quarter to three-eighths of an inch wide. The stitches are sewn far apart, exposing the foundation between them. The stitches are interlocking, and the foundation is a thick bundle of grass. The Chippewa discs are exceedingly fine in workmanship. They have a single-rod foundation, the rod being exceedingly narrow and flexible. After the spiral course of the coiling has been finished off, another ring, non-spiral in character, is placed on the rim.[34] Every other stitch on the rim catches the rod below, while the stitches between simply wrap around the foundation rod. This is the finest specimen of coiled work from the eastern part of the continent.

In surveying the various features of coiled ware we have found the following distributions:

Comparing the direction of work, baskets are woven to the left of the worker in the central California, Basin, and Southwestern areas; to these should be added the Plains gambling baskets of the first type. Baskets are woven toward the right of the worker in the south California and Salish areas, and by the Yuki and the Eskimo of the Mackenzie area; to these should be added some Paviotso baskets, and the Plains gambling baskets of the second type. The work surface is the convex side in the central California, Basin, and Salish areas, among the Yuki, and among the Eskimo of the Mackenzie area. In the Southwest trays and bowls are worked on the concave surface, bottle-shapes on the convex. In the south California area trays are worked from the concave surface, bottles and globular forms from the convex; but deeper baskets may be worked either from the concave or convex surface. Stated in terms of the last or rim coil, as observed from above, the direction of the spiral coil progresses in clockwise fashion in the central California and Basin areas; in Plains

[33] Both specimens are now in the Museum of the American Indian, Heye Foundation.

[34] This rim ring is sometimes used by the Chemehuevi and the Salish.

gambling baskets of the second type; in south California trays and bowls; and in Southwestern bottle-shapes. The spiral coil progresses counter-clockwise in the Salish area; among the Yuki; among the Eskimo of the Mackenzie area; in Plains gambling baskets of the first type; in south California bottle-shapes; and in Southwestern trays and bowls.

In the manner of sewing, interlocking stitches are characteristic of the work of the Pomo and Miwok, the Southern Paiute, the Eskimo of the Mackenzie area, the Miami, and the Pawnee (viz., as above classified, Plains gambling baskets of the second type). Non-interlocking stitches are characteristic of the Yuki, the south California and the Southwestern areas. Stitches split on the non-work surface characterize the work of the Maidu, Washo, and Ute; the Plains gambling baskets of the first type; and the Eskimo of the Mackenzie area, in addition to interlocking their stitches, split them on the non-work surface. In the Salish area the stitches are split both inside and out, viz., on both surfaces; the Shuswap, however, split their stitches on the outer or work surface only.

In the foundation element, foundations of the bundle type (see fig. 6) include the multiple-grass foundation used in the south California area and by the Eskimo of the Mackenzie area; the multiple-splint foundation used in the Salish area, and in the Southwest area by the Pima, Papago, and Hopi; and the rod surrounded by splints foundation used by the Yuki.

Foundations of the triangular type (see fig. 7) include the three-rod triangular foundation used in the central California area, and by the Chemehuevi, Moapa Paiute, Havasupai, and the San Carlos and Jicarilla Apache; the five-rod triangular foundation used occasionally by the Jicarilla Apache; and the two-rod and bundle foundation used in modern times only by the Navaho.

Foundations of the vertical type (see fig. 8) include the one-rod foundation used in the Mackenzie area, and by the Pomo, Miwok, and Paviotso, and found also in the Chippewa coiled discs and the Plains gambling trays of the second type; the two- and three-rod vertical foundation used by the Ute and Shoshoni in the Basin area, and in the Plains gambling trays of the first type; the two-rod and bundle vertical foundation which occurs among the Mescalero Apache; and the slat and bundle vertical foundation of Lillooet basketry and some Mescalero Apache basketry.

III. Twining and its Distribution

Twined weaving for matting, bags, sandals, and as a means of fastening loose fibres together, has a wide distribution in North America. Here I am limiting myself to baskets in this weave. These, as distinct from bags,

mats, nets, and sandals, are stiff in texture and permit of weaving upward toward the mouth, while softer fibres are necessarily woven from the top downward, or the warps are artificially stretched on a frame or loom.[35]

Twined basketry occurs in the Northwest coast area, the north California-Puget sound area, the central California area, among the Basin Shoshoneans, and in the Southwest area. Of these the tribes included in the Northwest coast and northern California areas make twined baskets almost exclusively. In the eastern part of the continent, twining in corn husk is found among the Iroquois, and there are suggestions of a technique of twining from the Kickapoo.

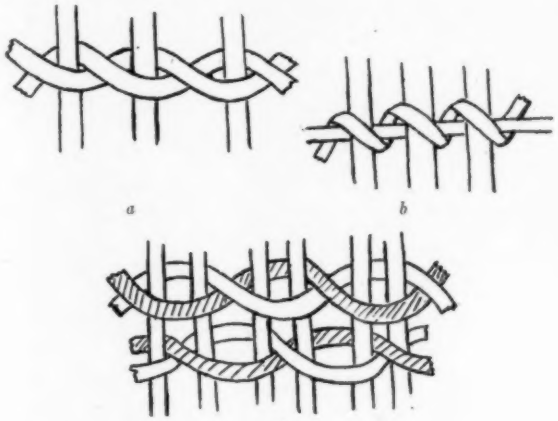

FIG. 10. *a*, plain twining; *b*, wrapped twining; *c*, twilled twining.

For comparative treatment, two main varieties of twining may be distinguished,—plain twine and twilled twine. A third variety of twining, wrapped twining, as far as it is employed in basket-making, has a North American distribution limited to the Puget sound region. (See fg. 10)

As in coiled work, most twined basketry is built up in a continuous spiral from starting knot to mouth. Also, as in coiled work, the basket is revolved so that the part in work is directly in front of the worker during manufacture. In describing twined work, statements should cover both the direction in which the spiral proceeds and the direction of the work in relation to the basket-weaver. However, as a general rule, twining in

[35] See also p. 468 for this tentative distinction of bags and baskets.

North America proceeds from left to right of the worker. Where the basket is woven suspended with mouth downward, as among the Aleut and Haida of Alaska and British Columbia, a clockwise spiral direction would be equivalent to the reverse in baskets worked mouth up; in both these cases, however, the direction of work would be toward the basket-

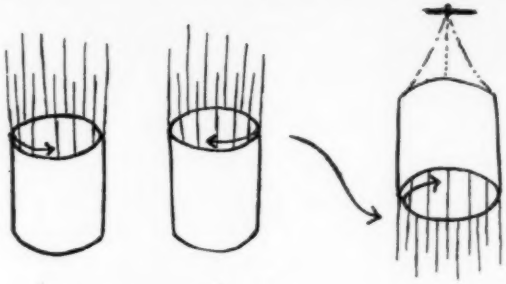

FIG. 11. *a*, counter-clockwise spiral, worked mouth up, toward worker's right; *b*, clockwise spiral, worked mouth up, toward worker's left; *c*, clockwise spiral, worked mouth down, toward worker's right.

maker's right. The same would be true of shallow trays whose inner or concave surface is toward the worker as the basket is being made.

A final objective characteristic of a twined basket is the surface appearance of the stitches, which reflect the basket-maker's manner of weaving. In twining, at each stitch the wefts are twisted on each other, and this twisting may be in one of two directions: toward the worker, or away from the worker. In terms of the direction of the work, a twist toward

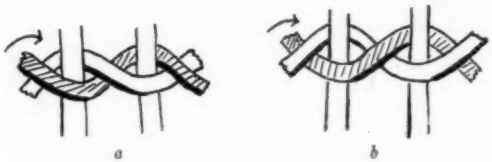

FIG. 12. *a*, downward lean; *b*, upward lean.

the worker results in a downward lean of the stitch on the work surface, while a twist away from the worker results in an upward lean of the stitch on the work surface. (See fig. 12*a*, *b*.)

Thus from the surface appearance of a twined basket we can determine the twist used in twining. But in order to determine which twist was used,

the other technical traits enumerated must first be defined, viz., the direction of the woven spiral; the surface worked—whether concave or convex; the position during manufacture, whether mouth up or mouth down; the direction of the work, whether toward the right or the left of the basket-maker. The lean of the stitch has to be stated in terms of the above, although all these descriptive facts, as well as the lean of the stitch, represent mechanically independent traits. The lean of the stitch, representing objectively the motor fact of the twist used in weaving, is of use in comparisons of basketry technique because in a large number of groups it is conventional to twist the wefts in one of the two possible ways exclusively.

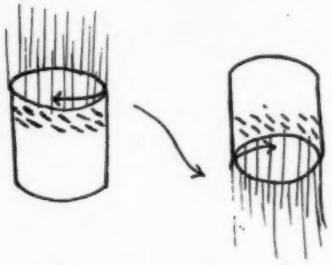

FIG. 13. *a*, clockwise spiral, worked mouth up, stitches leaning upward to the left; *b*, clockwise spiral, worked mouth down, stitches leaning downward to the right.

Figure 13 illustrates that to give the actual lean of the stitch it is not enough merely to identify the direction of the spiral. In figure 13*a*, we have a basket worked mouth up, with a clockwise spiral, and stitches leaning upward to the left. In figure 13*b*, drawn by simply turning 13*a* upside down, we have a basket worked mouth down, but the spiral is still clockwise, and yet the stitches will be seen to lean downward to the right.

In the Northwest coast area twined ware of the finest quality is made in the plain twined technique. The baskets made in the area are for the most part cylindrical in shape. Cursory examination will show that there are apparently two types of baskets here, those of the Aleut and Haida on the one hand, and those of the Tlingit on the other. This apparent difference arises from the fact that when the finished baskets are viewed in their normal sitting position, the direction of the spiral is seen as clockwise for the Aleut and Haida basketry, but as counter-clockwise for basketry for the Tlingit. However, Aleut basket-makers suspend their

work mouth down while in process, Haida basket-makers weave with their work mouth-down on a short stake, but Tlingit basket-makers weave with their work resting mouth upward on the ground.[36] Thus the actual direction of work with respect to the worker is the same throughout, viz., toward the right of the worker. In addition, throughout this area, the stitches lean downward toward the right as the basket is in work, and the convex work surface is the surface always used.

The Tlingit use the technique of false embroidery for decoration (see fig. 14).

Finely twined hats are attributed to the Tlingit, Haida, and the groups south of them in this area. The shape of the Nootka hats is distinctive; they often have plaited starting knots showing four squares at the center. These four strips that are plaited are then split up into many fine warp threads.

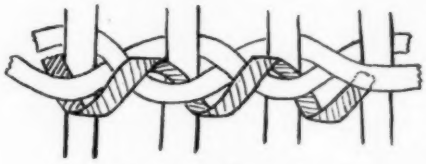

FIG. 14. Tlingit false embroidery.

This method of splitting wider plaited elements into finer strips at a certain point of the work is often found in plaited baskets of this area; for example, the wider strips which have been used in plaiting the bottom of the basket, may be split at the bend into finer strands, which are then used in plaiting the walls.[37]

In the north California-Puget sound area the twining is in the plain twined technique. The spiral is always counter-clockwise, the convex work surface is used, and the direction of work is toward the right of the worker. All baskets are manufactured mouth up. Many round, shallow trays, some of which are slightly conical, appear to be worked on the concave surface, but this is not the case. These are worked as all other baskets of the area, from the convex surface; when finished, they are dampened

[36] Kwakiutl openwork baskets in wrapped twining are manufactured resting on a stake, mouth-down. Boas, 1909, plate xxviii. The Koskimo, on the other hand, rest this kind of basket on the ground, mouth-up, during manufacture. Boas, 1909.

[37] A hat of very peculiar shape, collected about 1794 among the Nootka, and now in the Heye museum, is made entirely in overlay twining. Mason, 419, and pl. 151, 1902.

and turned inside out, so that the work surface appears on the inside.[38] In general the stitches lean upward toward the right—the direction of work—with some exceptions among the Klamath-Modoc, in some Pit River examples, and in sporadic cases from Puget sound.

Two rectangular twined baskets from the Quamichan of Vancouver island, a Salish tribe, alternate several rows of twining, stitches leaning upward to the right, with several rows of twining, stitches leaning downward to the right, throughout the body of the baskets, producing in this way a decorative effect on the surface.[39]

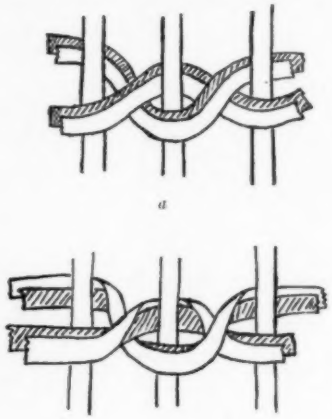

FIG. 15. *a*, overlay twining (northwestern California); *b*, overlay twining (northeastern California).

The method of decoration used in this area is overlaying, a technique by which the surface of both weft threads is covered with ribbons of grass. In northwest California the overlaying does not appear on the inside of the basket, which is also the case in overlaid work around Puget sound; while in northeast California the stitches are so twisted that the overlaid design appears both inside and out, identically. (See fig. 15.)

[38] Explained to me in conversation by Miss L. M. O'Neale of the University of California. A new basket is weighted down over an old one placed bottom up to serve as a mold and covered with a wet rug or quilt. When the rug is dry the new pan has been given its permanent shape.

[39] Field Museum of Natural History, 85451, 85452.

Among the Coast Salish an openwork twining with vertical warps and with double diagonal-crossing warps is found in which the warps are overlaid at intervals with ribbons of grass.[40]

The Makah of the northernmost coast of the state of Washington use for their baskets a weave known as wrapped twining. In wrapped-twining, the vertical warps are crossed by a horizontal warp. The weft proceeds horizontally, and is wrapped around each crossing of the warps. This technique is used for decorated zones on bags and soft baskets by the tribes in Washington, as well as further north along the coast.

The Kwakiutl, of the Northwest coast area in this classification, make openwork baskets in this technique, called "bird-cage weave" by Boas.[41] These baskets are four-sided with angular corners. At the corners two wrappings are made instead of one, and these cross diagonally so that the diagonal lean of the wrapping stitch changes in each alternate row.

False embroidery is also used occasionally by groups of this area for decoration. (See fig. 14.)

In the central California area, plain openwork twining is used throughout the area, viz., by the Pomo, Maidu, Washo, and probably also by the Miwok. Finer techniques of twining, however, are used only by the Pomo.

From a technical standpoint, Pomo basket-makers are the most versatile in North America. Both coiled and twined ware are equally stressed, and in both techniques the workmanship of the finished products is of the finest quality. In twining, the Pomo use plain and twilled twining most extensively; and for various special purposes, the techniques known as three-strand twining and three-strand braided twining, as well as lattice twining, are used. In a basket whose body is made in plain- or twilled-twining, the Pomo often take a few stitches in wrapped twining technique at places in the decoration where it is more practicable for manipulating the color.

For twined baskets the spiral progresses counter-clockwise; the convex work surface is used, and the work proceeds toward the right of the worker.

While the women make all the fine baskets, the men make certain openwork twined baskets and fish traps. In work made by the women, the stitches lean downward, in that made by the men, the stitches lean upward.[42]

In the Basin Shoshoni area, twilled twining is used in making water bottles—which when finished are covered with pitch to render them water-

[40] Am. Mus. Nat. Hist., Quinault 16/4935, 16/4895.

[41] Boas, 1909.

[42] Barrett, 147, 1908.

tight—, winnowing trays, and women's caps. The direction of the spiral in bottles and caps is counter-clockwise, the convex work surface is used,

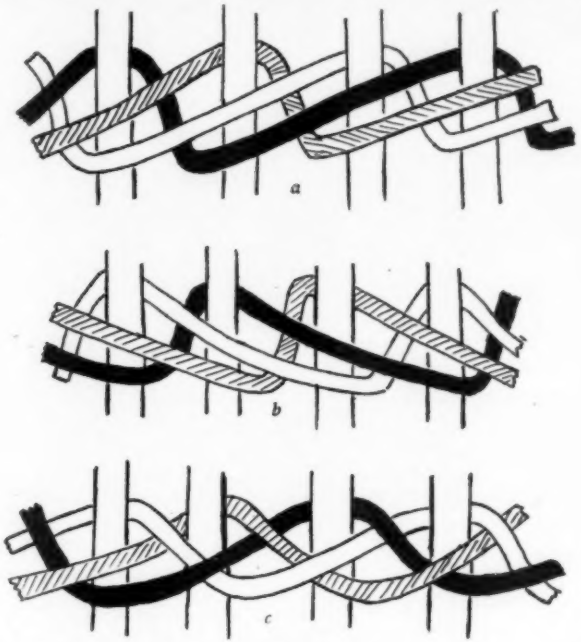

FIG. 16. *a*, Havasupai-Shoshoni three-strand twining; *b*, Pomo three-strand twining; *c*, Pomo three-strand braided twining.

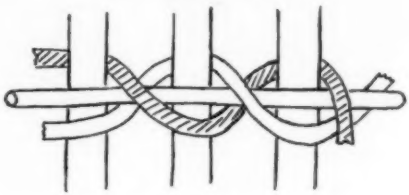

FIG. 17. Pomo lattice twining.

and the direction of the work is toward the right of the worker; the stitches lean upward.

In the Southwest area twilled-twined carrying baskets, as well as plain-twined cooking baskets are made by the Havasupai.

"Three strand twining is commonly introduced on all types of baskets for decorative purposes. The strand usually crosses two warps, giving a much closer stitch than diagonal twine. Three strands crossing three and sometimes four warps are also used decoratively. There is no great regularity in inserting these stitches; crossing three often lapsing into crossing four warps, and vice versa. The majority of water bottles are made in three strand twine over two warps (some of this may be three strand braiding); the beginning seems to be always diagonal twine."[43]

Twilled twining is also used by the Apache groups in making water bottles. It is, however, difficult to be certain that all the Apache groups made these twined water bottles, since baskets everywhere are frequent articles of trade. When I visited the White Mountain Apache reservation in the fall of 1929, I found that a number of women there were still making water bottles of this type.

Havasupai trays have a clockwise spiral and are worked on the concave surface; Havasupai burden baskets and water bottles are begun on the concave surface, but after the first few courses the warps are sprung from their position in a flat plane into a conical position. The convex surface of the tray-like beginning is then pushed inward and becomes the inner or concave surface, after which the work proceeds on the convex surface. In this process, before the bottom is turned inside out, the direction of the spiral is clockwise; afterwards the direction of the spiral becomes counter-clockwise, but the actual direction of the work is constant throughout, namely, toward the right of the worker.[44] Thus in all Havasupai and Apache twining the weaving is done toward the worker's right, and the stitches lean upward in the direction in which the work progresses.

This upward lean of the stitch is shown in three-strand as well as in other varieties of twining. The three-strand twining of the Havasupai-Shoshoni type (fig. 16*a*) differs in this respect from that of the Pomo. In the upward leaning stitches the thread which is coming forward from behind the warp stick passes *under* the thread which is on the work surface, while in stitches with a downward lean the thread which is coming forward from behind the warp stick passes *over above* the thread which is on the work surface. In the case of three-strand twining there are always two threads on the work surface instead of one, and the thread from behind the warp stick passes under or over these *two* surface threads in crossing over to the work surface (fig. 16*a* and *b*).

[43] Spier, 132, 1928. Excellent photographs and descriptions of manufacture are to be found in this treatment. In the above quotation, Spier has used "diagonal twine" for the technique which I have called twilled twine in the present treatment, and "three strand braiding" where I have preferred three-strand braided twine.

[44] Spier, 130, 131, 1928, describes this process and illustrates it by photographs.

In eastern North America twined basketry occurs only among the Iroquois. Here a number of salt bottles and tobacco baskets of twined corn husk are attributed to Iroquoian tribes, but it is not known among which Iroquois groups they were made. There is some probability that they were chiefly by the Seneca.[45]

These baskets, as seen from above, have a clockwise spiral at the mouth and are apparently worked on the convex surface. There is some possibility that these baskets were hung mouth downward in making, in which case they were woven toward the right of the worker. Some specimens have stitches leaning upward, while others have stitches leaning downward, indicating that there is probably no conventional standard as to the twist of the stitch. The use of both twists may mean that different workers or families use only one or the other twist; but this is not at all necessary, since as in the case of the Quamichan baskets,[46] an individual worker may use both twists. As no detailed records of the manufacture of these Iroquoian baskets are available, technical analysis cannot be conclusive on these points.

In most basket-making, the worker attempts to conceal stubs of new threads and added warps by confining them to the non-work surface. To this generalization, the Iroquois twined baskets may be an exception. The Iroquois twined salt bottles would ordinarily be made on the convex surface by any group of basket-makers, unless some very special method were used. Nevertheless, in these baskets the stubs of added warps show on the outer or seen surface. At the rim, in finishing the bottle, the warps are bent outward so that the stubs appear as a fringe around the mouth on the outer surface. Thus if the convex surface in these baskets is to be considered the work surface, the Iroquoian basket-maker does not make the usual effort to have the work surface appear as smooth as possible by concealing all stubs or clipping them off on the non-work surface.[47]

From the Kickapoo there is an example of twining which might well be considered here in relation to twined basketry. This is a double gourd with

[45] Specimens of this type of Iroquoian basketry now in the possession of the Museum of the American Indian, Heye Foundation, are catalogued as Seneca.

[46] See p. 477.

[47] Dr. F. Olbrechts, who has recently been among the Tuscarora, has told me about their masks and tobacco baskets and has shown me specimens of the masks. Both these types are made of braided strips of corn husk which are coiled spirally and sewn together with commercial cord. Dr. Olbrechts tells me that the Tuscarora in preparing their braided strips for baskets, masks, or mats, insert a new thread so that the stub is seen on the surface toward the worker. When questioned, the woman could see no objection to these stubs. This stub surface is used for the outside or seen side of the masks and mats. This information supports the view taken above that in the Iroquois twined baskets, the convex surface which shows the stubs is nevertheless the work surface.

a large globular body and a small neck, which is encased in a twined basketry covering. This covering was probably made upon it, evidently for the protection of the gourd. The warps are slats or splints about three-quarters of an inch wide, and the wefts are grass of much softer texture. The stitches lean upward toward the right. There are also several rectangular baskets from the Kickapoo which combine twining and checker-plaiting. In these a row of plaiting alternates with a row of twining throughout the body. The progress of the plaiting thread is non-spiral, while the twining threads progress spirally, crossing the ribbon-like course of plaiting diagonally upward toward the right, and continuing horizontally above it. Evidently, the work proceeded toward the right of the worker, the stitches leaning upward.[48]

In the above survey of the technical features of North American twined basketry, we have found, first, that as regards direction of work, all North American twined ware is worked toward the right of the basket-maker.[49]

The work surface is the convex side throughout, with the exception of Havasupai trays, where the concave surface is the work side, and Havasupai twined water bottles and carrying baskets in which the first few courses are worked on the concave surface. It is not known if Ute and Paiute twined water-bottles are made in the same way as those of the Havasupai. North California trays are worked on the convex surface, and when completed are turned inside out.

All twined basketry in North America is manufactured mouth up, with the exception of Aleut and Haida basketry, which is manufactured mouth down, the Aleut suspended, the Haida set on a stake.

The lean of stitch is downward in the twining of the Northwest coast area, in the finer twining of the Pomo, including all the women's work, in some examples from Pit River tribes and the Klamath-Modoc, and in some of the Iroquois twined specimens. The lean of stitch is upward in the twining of the north California, the Basin-Shoshoni, and the Southwest areas, in the coarser twined work of the Pomo, which is made by men,

[48] This gourd, and the baskets combining plaiting and twining, are now in the Museum of the American Indian, Heye Foundation.

[49] A possible exception is the twined tule trinket basketry of the Salinan described by J. A. Mason, 152, 1912: "In making, the bottom of the basket is held toward the worker, the twine progressing clockwise as the hollow of the basket is looked into, and the strands taking a downward direction on the exterior." From this it would appear that these baskets are made on the convex work surface, the spiral progressing clockwise, and are woven toward the left of the worker. This interpretation, however, makes the direction of Salinan work apparently inconsistent with the rest of North American twining, and suggests that some fact of position during manufacture might account for the seeming exception.

and in some of the Iroquois twined specimens. Stitches leaning downward and stitches leaning upward are found together on the same basket in specimens from the Quamichan, a Salish tribe of Vancouver island.

IV. Plaiting and its Distribution

Most of the plaited basketry in North America is manufactured in the eastern part of the continent,[50] in the Eastern Algonquian and Southeastern areas. In western North America plaited baskets are found among the Kwakiutl and neighboring tribes of the Northwest coast, and among the Pueblo and Pima groups of the Southwest area. In central North America, the Mandan, Hidatsa, and several Caddoan tribes made plaited burden baskets. Cane or splint are the usual materials for plaiting, particularly in the east, but the Mandan, Hidatsa, and Arikara use strips of rawhide instead.

Plaiting is of two main types, plain or checker, and twilled. In checker plaiting the elements are woven under-one-over-one so that a checker pattern results.

In twilled plaiting the elements are woven under-two-over-two, or under-one-over-two, or under-three-over-three, or under-two-over-three, or in any combination or variation of these. Instead of checker patterns as produced in plain plaiting, twilled plaiting results in a large number and variety of angular, diamond, and diagonal patterns, which may be further developed and complicated by intricate combinations of colored materials. The patterns resulting from twilled plaiting depend both upon the way the first crossing of strands is made in the center, and also upon the order of alternation of the strands.

In both types of plaiting, checker, and twilled, while the basket is in work the strands may be in horizontal and vertical positions, or in diagonal positions, one set of strands slanting to the left and the other to the right of the worker.

The detailed analysis of the interrelations between the mechanics of the alternation of strands in plaited basketry and the patterns produced is of more technical interest than of use for comparative historical treatment.[51]

Since, as should be apparent, the mechanical possibilities in plaiting are very limited, the amount of technical parallelism that occurs is great; so that for comparative purposes the distribution of the technique as a

[50] Speck, 1920, considers the distribution of plaiting in eastern North America and the problems in plaited basketry of the interrelation of technique and design.

[51] I have considered the fundamentals of the problem of technique and design in my "Technique and Design in North American Basketry," as yet in manuscript.

whole rather than an enumeration of the distribution of minor varieties, is the main fact of historical interest.

V. Prehistoric Basketry

The present discussion is not intended to be an exhaustive treatment of all the prehistoric material in museum collections.[52] The material I have examined is as follows:

Basketry of the ancient Basket-Makers from Grand Gulch, Utah, secured by G. H. Pepper.[53] This material includes a number of round coiled trays and small coiled globular baskets, coiled carrying baskets with oval bottoms and flaring mouths, as well as fine twined bags and sandals, a twilled globular basket containing corn, and a twilled ring basket. The last two may not be contemporaneous with the other material. In addition there is a sifter of openwork coiling with one-rod foundation coiling around the rim.

Basket-Maker specimens from Kane county, Utah, secured by J. L. Nussbaum.[54] This material includes fragments of shallow coiled trays, and some larger baskets; and two unfinished pieces, one of an oval coiled bottom, the other of openwork coiling similar to the sifter-basket from Grand Gulch. In all, thirty basketry specimens were recovered, all made in coiled techniques. While there was no twined basketry, fine twined bags and sandals were also found.

Basket-Maker material from northeastern Arizona secured by Kidder and Guernsey.[55] This is the largest collection of Basket-Maker material from any one locality that we yet have and is the basis of Basket-Maker chronology. The specimens include a large number of shallow coiled trays; a few complete baskets, of small globular shapes and large coiled bottle shapes with pointed bottom and globular top; and a large number of fragments, representing in addition to the above types, carrying baskets with

[52] Since the above was written, I have had opportunity to examine prehistoric material more extensively. This later technical study is discussed in a paper which is essentially supplementary to the present treatment, entitled Problems in the Study of Ancient and Modern Basket-Makers, to appear shortly. Decorative designs and forms of the prehistoric material, I am considering in a detailed study of Southwestern decorative art now in preparation under the auspices of the Council for Humanistic Studies of Columbia University.

[53] Pepper, 1902; material now in the American Museum of Natural History. See also Mason, 497–498, pls. 205–211, 1902.

[54] Nussbaum, 1922; with the notes on the artifacts by Kidder and Guernsey. The material from this site is now in the Museum of the American Indian, Heye Foundation.

[55] Kidder and Guernsey, 1919; Guernsey and Kidder, 1921. This material is now in the Peabody Museum of American Archaeology and Ethnology.

flaring sides. All the above specimens are in coiled technique. Twining occurs only in the form of fine twined bags and sandals.

A comparison of these three collections shows that the most characteristic Basket-Maker form is the shallow coiled tray; other frequent forms are the coiled carrying baskets and fine twined bags and sandals.

Material, probably Late Basket-Maker, has been secured by Earl Morris from Cañon del Muerto.[56] This includes coiled specimens of shallow trays, deeper forms, globular baskets, and carrying baskets with flaring rims.

Material of Basket-Maker type is included in the Wetherill collection,[57] and in the Hazzard collection.[58] No chronology is available for these specimens. The bulk of these collections are in technique and form of the type of Basket-Maker work, including coiled trays, coiled bowls, coiled carrying baskets with flaring rims, coiled sifter baskets, and a few twill-plaited ring baskets.

For a later period of the Southwest, Cliff-Dweller material has been secured by Kidder and Guernsey from northeastern Arizona.[59] These specimens include twill-plaited yucca ring baskets, twill-plaited matting, and some coiled ware. Twill-plaiting rather than coiling is here the predominant technique.

Pueblo work of "considerable antiquity," illustrated by O. T. Mason,[60] includes coiled bottles, shallower coiled cups, wickerwork, and twill plaiting.

Important prehistoric material has more recently been found by M. R. Harrington at Lovelock, Nevada.[61] These specimens include a few complete coiled baskets, a small coiled basket bottle, and half of a plain twined basket bottle; a large number of fragments of coiled and twined techniques; and many fragments in a wicker technique of a type unknown in modern North America.

[56] These specimens are now in the American Museum of Natural History.

[57] Now in the University of Pennsylvania Museum.

[58] Now in the University of California Museum. This is a combination of three collections: one from caves and cliff houses in southern Utah, collected by McLloyd and Graham in 1892; a second from the cliff houses in Mancos and tributary cañons of southwestern Colorado, collected by the Wetherill brothers in 1892–3; and a third lot of miscellaneous material from McElmo canyon of Colorado. This statement is taken from a note appended to the collection in the University of California Museum.

[59] Kidder and Guernsey, 1919; now in the Peabody Museum of American Archaeology and Ethnology.

[60] Mason, 253, 499, 501, pls. 28, 212, 214, 1902.

[61] Loud and Harrington, 1929; the collections are now in the Museum of the American Indian, Heye Foundation, and the University of California Museum.

In Ozark Bluff Dweller sites of Arkansas and Mississippi, M. R. Harrington found several specimens of coiled basketry.[62] These included a fragment of a plain-twined water bottle lined with pitch, and a number of twill-plaited baskets in cane splints with vertical-horizontal, and diagonal elements.

Coiled basketry has been found in California caves in the southern part of the state.[63] A few specimens of twining of considerable age have been found in California and Rhode Island.[63]

VI. Prehistoric Coiling

Coiled basketry is present in Basket-Maker, Lovelock, ancient pueblo, Ozark Bluff-Dweller, and California cave material; some specimens of Cliff-Dweller provenience, but of Basket-Maker type, have also been found. Technically this coiled work can be described as follows:

Material referred to as Basket-Maker has, almost without exception, a two-rod and bundle triangular foundation. Trays have a counter-clockwise spiral, and are worked on the concave surface toward the left of the worker. Deeper forms, including those almost cylindrical, are also worked in this way on the concave work surface, toward the left of the worker. In some globular forms, the body up to the shoulder is worked on the concave surface, while at the shoulder work is taken up on the convex surface and continues on this surface from shoulder to rim; the direction of work is toward the left of the worker throughout. To attain this end, the basket-maker has to alter the spiral progress of the coil at the shoulder. This shows on the surface as two breaks in the coil, one where the counter-clockwise circuit was finished off, and the other where the clockwise circuit was begun. Illustrations of this device can be seen in Basket-Maker globular baskets from Marsh Pass, Arizona.[64] Late Basket-Maker globular baskets from Cañon del Muerto,[65] and in "Ancient Southwestern" bottle-shaped baskets.[66] It has also been used occasionally in modern times in the globular baskets of the Pima and Papago.[67] Thus in Basket-Maker material there is a strong convention to use the concave work surface, and direct

[62] Now in Museum of the American Indian, Heye Foundation.

[63] The specimens from these localities which I examined are in the Museum of the American Indian, Heye Foundation. Coiled ware from the California caves is illustrated in Mason, plates 201, 202; see also text p. 487, 1902.

[64] Now in the Peabody Museum of American Archaeology and Ethnology. See Kidder and Guernsey, pl. 76b, 1919.

[65] Now in the American Museum of Natural History.

[66] Am. Mus. Nat. Hist., 50/9579, Hopi; Heye 7/825, Santa Ana.

[67] Am. Mus. Nat. Hist., 50.1/8345, Pima.

the work always toward the left of the worker; stitches are in all cases non-interlocking.

While two-rod and bundle triangular is the typical Basket-Maker foundation, a Basket-Maker specimen from Kane county, Utah is exceptional in that it has a foundation of a rod surrounded by fibre.

There are other variations in foundation in material which can be associated with Basket-Maker. A coiled bottle from the "Cliff Dwellers of Southwest Utah" has a three-rod triangular foundation, is coiled in a clockwise direction, convex work surface, toward the left of the worker and has non-interlocking stitches.[68] Certain coiled specimens in the Wetherill collection which have a triangular-form foundation, use a reed instead of a bundle of fibre for the third element at the apex.

One specimen in this Wetherill collection is made in double-coil on a two-rod and bundle vertical foundation. This basket is marked as from Sandal Cliff House, Mancos Cañon. Double coiling is known in modern times as used by the San Carlos Apache and the Salinan.[69] Double coiling is not manufactured in a figure-eight stitch but is made exactly like ordinary coiling, the two courses being carried along simultaneously: first about an inch of the lower course is sewn, then about the same distance of the course above it, then the lower course, then the upper, etc. In the ancient specimen and that of the modern Salinan, double-coiling begins at the starting knot, while in that of the modern San Carlos Apache, double coiling begins after the bottom disc has been sewn for some distance in single-course coiling. This double coil method may mean a slight saving in time, since in each revolution of the basket in double coiling, twice as great an area is within reach as is presented in single-course coiling; in the actual sewing of the stitches, however, no time can be gained, as the same area is covered.

A unique type of coiled ware found in prehistoric Southwestern material is the sifter basket. This type of coiling is unknown in modern North America. In principle it resembles Samoan and Fuegian types of coiling, and an example from San Salvador.[70] Two methods of twisting the thread are found in this technique (see fig. 18*a* and *b*) one in a specimen from Kane county, Utah,[71] and the other in a specimen from the Hazzard collection. Specimens from other localities illustrating the Kane county type

[68] Heye 8/7397.

[69] Mason, pl. 31, figure 2, 1912; see also p. 148, note 122, where Mason mentions the same prehistoric specimen referred to above.

[70] Now in the Museum of the American Indian, Heye Foundation.

[71] Illustrated by Kidder and Guernsey in Nussbaum, 97, 1922.

of twisting are one in the Wetherill collection, marked "found in a ruin in Lake Cañon," and another from Grand Gulch, Utah.[72]

Coiled basketry from Lovelock Cave has, in flat trays, a counter-clockwise spiral, worked on the concave surface, but in bottle shapes, deeper vessels and fragments of such types, a clockwise spiral, worked on the con-

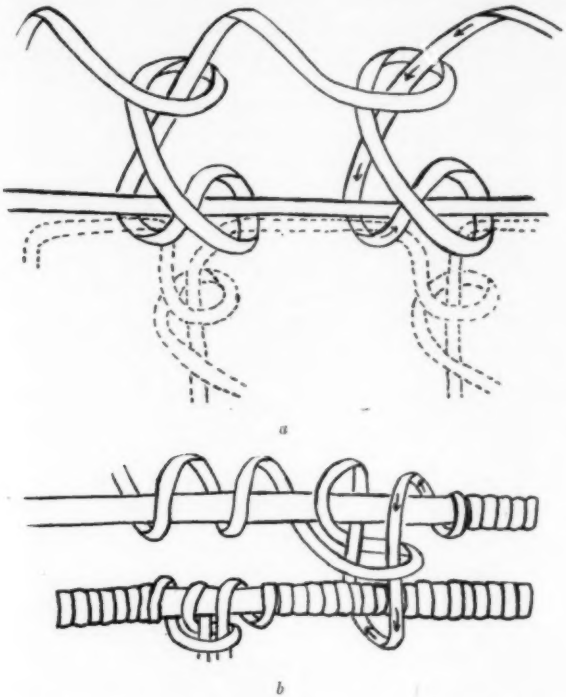

FIG. 18. *a*, technique of coiling of Kane county type sifter basket; *b*, technique of coiling of sifter basket in Hazzard collection.

vex surface. In both cases the work proceeds toward the left of the worker. Foundations include a three-rod triangular foundation in which the upper rod is split by the stitch from above, and a one-rod foundation. Most specimens show split stitches on the non-work surface; examples of stitches

[72] Mason, pl. 31, 1902; now in the American Museum of Natural History.

split inside and out also occur; and a number of specimens are made with interlocking stitches.

From the Ozark Bluff Dweller remains there are three specimens of coiling, two entirely flattened round trays, and a small fragment. All of these were probably worked toward the left of the worker, the two trays probably on concave work surface. Since the original shape of these baskets is lost, the work surface cannot be stated with certainty. As regards foundation, the trays have a two-rod-vertical, the fragment a one-rod. The stitches in the trays are split on one surface, probably the convex or non-work surface; while the fragment is of a basket made with interlocking stitches. The trays have a plaited starting knot, an unusual feature for coiled basketry, which is found in modern work only among the Pima.

Material from the caves of south California are coiled in a clockwise spiral for those baskets worked on the concave surface, but in a counter-clockwise spiral for those baskets worked on the convex surface. In all the specimens the actual direction of work is toward the worker's right. Stitches are throughout non-interlocking; and the foundation element regularly multiple-grass.

VII. Prehistoric Twining

Twined basketry, as distinguished from softer products of twining such as fabrics, bags, and sandals, is not so frequent in the prehistoric remains as coiled basketry. The only site at which twined basketry was of equal importance with coiled basketry was in Lovelock cave. In addition to Lovelock material only isolated specimens have been found. Prehistoric twined water bottles lined with asphalt are reported from the south California area.[73] A single fragment of a twined water bottle lined with pitch was found with the Ozark Bluff Dweller remains. Finally, there are two twined fragments of some age: one is from Rhode Island and was found in association with European cloth and iron objects; the other is from Santa Catalina island, California.[74]

Twined specimens found at Lovelock include material made in the techniques of plain-twined, twill-twined, three-strand-twined, and overlay-twined. Basing my statements on the specimens large enough to give the technical clues, it is probable that throughout Lovelock twined basketry the spiral circuit is counter-clockwise, the work surface is the convex side, the position of work is mouth up, and the actual direction of work is

[73] Kroeber, 561–562, and pl. 55, 1925.

[74] Both these twined fragments are now in the Museum of the American Indian, Heye Foundation.

toward the right of the basket-maker. Both leans of stitch, upward to the right and downward to the right occur, the former being a good deal more frequent.

In a number of particulars the Lovelock twined material resembles work of northern California. Many of the Lovelock specimens are in overlay twining and show the design identically on both surfaces. Overlay twining in modern North America has a distribution limited to the north California-Puget sound area;[75] this work is of two types, that showing the design only on the outside, localized to northwest California, and that showing the design inside and out, localized to northeast California.[76] Thus Lovelock overlay twining is a direct parallel to northeast California work. Further, in Lovelock work an occasional row of lattice, three-strand, or three-strand braided twining is introduced on plain-twined surfaces, a decorative method used also in modern north California overlay-twined baskets.

The twined water bottles from south California caves pictured by Kroeber are in plain twining, three-strand twining and twilled twining. It is impossible to be sure of other technical characteristics from the pictures alone, but if these were manufactured mouth up and toward the right of the worker, as seems probable, then the stitches have a downward lean toward the right in the plain-twined and three-strand-twined specimens, while in the twilled-twined specimen the stitches lean upward toward the right.

The Rhode Island twined fragment is in plain twining and has a double-twisted warp. The Santa Catalina island fragment combines wicker and twining. Both are too incomplete to permit determination of other technical characteristics. I have not as yet been able to determine the characteristics of the Ozark fragment, beyond the fact that the work is plain twining.

VIII. Prehistoric Wickerwork and Twilled Plaiting

Wicker.—The modern distribution of the wicker technique in North America is limited to rough globular baskets of the Hopi and Zuñi, some rough carrying baskets of the Zuñi, some ceremonial trays of the Hopi, the Pomo wickerwork seed-beaters, and the trinket baskets made in eastern Canada. In the latter case, several Algonquian tribes have, in recent times, made these trinket baskets extensively for trade. In our own culture, wickerwork is one of the most widely used techniques in basketry manufacture.

[75] See page 477.

[76] See figure 14.

In prehistoric material, the most important wickerwork is a technique found exclusively in Lovelock cave, except for a single specimen allocated to "Dry cave no. 2, Pyramid lake, Washoe county, Nevada."[77] This technique which occurs in a large number of specimens at Lovelock is not duplicated in modern North American basketry. The warps are peeled rods, the wefts are flat stiff ribbon-like material. There is always a double thickness of weft. Sometimes the under weft is pushed upward to widen the ribbon, increasing the width to one and one-half times its usual width. The warps are visible between the stitches. Sometimes the rows of weft are so tightly squeezed together that the warps are covered and the surface gives the effect of twining. One specimen, tied to a wicker fragment, was of twining mixed with wicker, of material similar in texture to other specimens. The twined part has an overlay design.

Designs in this Lovelock wicker technique are made by using dark brown bark wefts. The double ribbon is twisted to eliminate or bring forward the brown dark side, and thus the design is seen in reverse on the inside.

The borders or edges of these Lovelock baskets are finished in a unique way. Where part of the edge is intact on these specimens, it can be seen that the warps are taken double and woven diagonally to the right, over-two, under-two, upon themselves, until the body is reached, where the ends are fastened with one or two rows of twining.

Twilled plaiting.—In prehistoric material twilled plaiting is found in Cliff-Dweller remains, in Ozark Bluff Dweller remains, and in work attributed to the Basket-Makers. Of these it is the typical technique of the Cliff-Dwellers, who use it in making shaped baskets, mats, and yucca-ring baskets. In a few Cliff-Dweller fragments, designs appear, made by combining black and natural elements.

The Basket-Maker material from several sites includes in twilled-plaiting, besides some yucca-ring baskets, a number of baskets in globular and cylindrical shapes. These shaped baskets are open on the bottom, and where a closed bottom is desired, the opening is either covered with leaves, or with a flat piece of plaited work, which is attached to the body of the basket by twining it to the stubs of the body.

SUMMARY

The distributions of prehistoric and modern technical traits compare as follows:

[77] Heye 15/8437.

In prehistoric coiled basketry, the direction of the spiral circuit is counter-clockwise in Basket-Maker trays, bowls, deeper forms, and in globular forms from the shoulder down; in Lovelock flat trays; and in those specimens from the south California caves which are worked on the convex surface. The spiral circuit is clockwise in Basket-Maker globular forms from the shoulder up; in Lovelock deeper bowls and bottle shapes; in south California cave trays and deeper forms worked on the concave surface; and in the one "Cliff Dweller" bottle from Utah. Some emphases should be added: Basket-Maker is principally counter-clockwise, Lovelock and California cave principally clockwise.

The work surface is the concave side in Basket-Maker trays, bowls, deeper forms, and in globular forms up to the shoulder; in Lovelock flat trays; in most of the south California cave material; and probably in the Ozark Bluff Dweller trays. The work surface is the convex side in Basket-Maker globular forms above the shoulder; in Lovelock deep bowls and bottle shapes; in a few south California cave specimens; and in the "Cliff Dweller" bottle from Utah. Emphases are: Basket-Maker and south California cave are principally concave work surface, Lovelock principally convex work surface.

The actual direction of the work is toward the left of the worker in all Basket-Maker material; in all Lovelock material; in the "Cliff Dweller" specimen; and probably in the Ozark Bluff Dweller specimens. The direction of work is toward the right of the worker in all the California cave specimens.

In the manner of sewing, stitches are interlocking in some Lovelock material and in the small Ozark fragment. Stitches are non-interlocking in all the Basket-Maker material, in all the California cave material, and in the "Cliff-Dweller" specimen. Stitches are split on the non-work surface in most Lovelock material, and probably in the Ozark Bluff Dweller trays. Stitches are split inside and out in a few Lovelock pieces.

In the character of the foundation, triangular-type foundations are found in the typical Basket-Maker two-rod and bundle triangular; in several Wetherill pieces which have two-rod and reed triangular; in the "Cliff-Dweller" specimen which is three-rod triangular; and in most of the Lovelock material which is three-rod triangular. Vertical-type foundations are found in the Ozark Bluff Dweller trays which are two-rod vertical; and in the double-coil Wetherill piece which is two-rod and bundle-vertical. One-rod foundations are found in the sifter baskets from a number of Basket-Maker sites; in some Lovelock specimens; and in the Ozark fragment. A foundation of one-rod surrounded by fibre is found in one

Basket-Maker specimen from Kane county, and I believe that other Basket-Maker material with this foundation is known. The material from the south California caves is all on a multiple-grass foundation. Emphases here should distinguish Basket-Maker and Lovelock foundations as triangular in type, Ozark foundations as vertical in type, and south California cave foundations as bundle in type.

In making a comparison of the distribution of modern and prehistoric technical traits of coiled basketry, the objective direction of the spiral coil can be disregarded, as the real significance of this is in the actual direction of the work and in the work surface used. Speaking broadly, the convex work surface is a convention of the prehistoric Lovelock people and the tribes of the modern central California, Basin, and Salish areas. Convention requires the concave work surface in the prehistoric Basket-Maker and modern Southwestern material. Convention favors the concave work surface in the ancient and modern south California material. The direction of the work is habitually toward the left of the worker in prehistoric Basket-Maker and Lovelock ware, and in modern work of the central California, Basin, and Southwestern areas. The direction of the work is habitually toward the right of the worker in work of south California, both ancient and modern, as well as in that of the modern Salish area. Interlocking stitches, which occur sporadically in Lovelock material and occur also in the Ozark fragment, are characteristic of the modern work of the Pomo, Miwok, and Southern Paiute. Non-interlocking stitches are characteristic of the prehistoric Basket-Maker material, the ancient and modern south California basketry and the work of the modern Southwestern peoples and the Yuki. Stitches split on the non-work surface characterizes the prehistoric Lovelock material and is also found in the Ozark trays, as well as in modern Maidu, Washo, and Ute. Triangular-type foundations are characteristic of the prehistoric Basket-Maker and Lovelock material and the work of the modern central California groups and several groups of the modern Southwest area. Foundations of the vertical-type appear in the Ozark material and are characteristic of work of the modern Basin area. Finally, foundations of the bundle-type characteristic of the ancient south California material are characteristic also of modern south California work; and occur also in work of the Yuki, Pima, Papago, Hopi, and some Salish tribes.

In regard to prehistoric twining, as already explained, it is of great importance only in the Lovelock material, and here a large part of the twined material is decorated in overlay. This method of overlay is similar to modern work of northeastern California.

In prehistoric wicker at Lovelock we found a technique wholly unique and unduplicated in modern work.

Several special facts of technical interest have appeared in the course of the survey. In the sifter baskets of the Basket-Makers, we found a coiled technique on a one-rod foundation which has special and unique characteristics in the manner of stitching of a kind unknown elsewhere in modern and ancient North America.

In Ozark coiled trays were discovered plaited starting knots, an unusual way of beginning coiled basketry found in modern times only in Pima work.

Among specimens of Basket-Maker type we found a single basket made in double coiling, a method which is very rare, and except for this basket, known only from modern San Carlos Apache and the Salinan.

There is, finally, the curious resemblance in foundation between Yuki basketry, which is on a rod surrounded by welt foundation, and the Basket-Maker specimen from Kane county, Utah, with a rod surrounded by grass foundation. This is hardly significant, however, since the basketry styles of the two are different in all other technical traits.

In general, save for the special exceptions just noted of Lovelock wickerwork and Basket-Maker sifter baskets, North American basketry of early and modern times displays throughout comparable techniques and processes. Of modern technical methods, only that of imbrication, as used in the Salish area for decoration of coiled work, is absent in the prehistoric material.

Thus the evidence as a whole indicates as high a development technically in prehistoric as in modern times in North America. The material also indicates that in early times basketry was widespread in North America and highly specialized in localized features.

In view of this high degree of specialization and localization in early basket-making, it seems probable that modern highly specialized manifestations of the art, such as we have in the case of the Pomo, should not be thought of as recent localized achievements on the basis of earlier unspecialized arts. On the contrary they more probably represent the persistence into modern times of ancient specializations.

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THE EM′-TIM′-BITCH, A SHOSHONEAN TRIBE

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THE Em′-tim′-bitch have been known by name for upwards of three-quarters of a century. Members of the tribe were among the signers of the treaty executed at Camp Belt on Kings river by the government commissioner G. W. Barbour on May 13, 1851. During the next five or six years the tribe was visited by W. M. Ryer, Major H. W. Wessells, and General E. F. Beale. But until 1904, so far as I have been able to learn, it was not referred to any linguistic stock.

In 1903, when working with Indians in the Kings river region on the west slope of the Sierra, I found members of two tribes—Em′-tim′-bitch and Wik-tchum′-ne—living near the place called Dunlap, in Mill Creek valley, Fresno county. They told me that the valley belonged to the Em′-tim′-bitch (Monache Piute of Shoshonean stock) and that the Wik-tchum′-ne (Yokuts stock) were intruders from Lemon Cove, a few miles above Visalia. Vocabularies of both were obtained.

In an article entitled "Distribution of Indian Tribes in the Southern Sierra and Adjacent Parts of the San Joaquin Valley, California," published in *Science* of June 17, 1904 (912–917), I correctly enumerated the Em′-tim′-bitch among the "Piute" tribes of the west slope of the Sierra.

Three years later Kroeber published an important paper entitled "The Shoshonean Dialects of California,"[1] in which he gave a useful comparative table of vocabularies of nineteen tribes (71–89). One of these is the Em′-tim′-bitch (written by him "Endimbich")—but the author is silent as to where or by whom it was obtained. This vocabulary, except for easily adjustable differences in alphabet and a few discrepancies, agrees with mine and belongs unmistakably with the Owens Valley or Monache series of so-called "Piute" tribes.

But on the last page of Kroeber's paper a most unfortunate footnote is added. It reads:

> Since the first portion of this paper was printed, Mr. S. A. Barrett has been among the Endimbich, whom he finds to inhabit the territory accredited to them on page 120, but to be Yokuts, not Shoshonean Mono (165).

In this statement Barrett was misled by his informant, an old man called "Tanner Dick" and "Big Dick." His Indian name is Al-al′-chă. He is gifted with a sense of humor and when asked by me in 1903 to count ten,

[1] Univ. Calif. Publ. Am. Arch. Ethn., vol. 4, no. 3.

repeated the well-known Yokuts numerals as spoken by his Wiktchum'ne neighbors, namely: Yet, Pong'-oi, So'-a-fin, Hat'-po-noi, Yit'-ching-it, and so on, but with an unmistakable "Piute" accent! I complimented him on his knowledge of a foreign language but added that I would be obliged for the words in his own tongue, whereupon he smiled and promptly gave me: Soo'-mă', Wah-hi', Pah'-he, Waht'-skwe, Mi'-ne-ge, Nah'-vi-he, Tah'-tsoo-e, Wah'-soo-e, Kwan'-nek-ke, Să'-wan-noi.

I then obtained from him in Em'-tim'-bitch—his own language—a fairly good vocabulary, which I later checked by a woman, and still later by another man, of the same tribe. There is, therefore, no question whatever as to the relationship of the Em'-tim'-bitch. In fact, the name itself, to anyone acquainted with "Piute" dialects, is unmistakable.[2]

The melancholy result of the well-intentioned footnote above quoted is that for twenty-three years various Californian anthropologists have complacently accepted the misidentification of the tribe, thereby referring it to Yokuts instead of Shoshonean stock.

The Em'-tim'-bitch is one of the series of Monache-Piute tribes—tribes derived from the Monache-Piute of Owens Valley—which in the long ago filtered through some of the high passes of the Sierra and established themselves in canyons and small valleys on the west slope. These tribes from the north southward are: Nim, Hol'-ko-mah (or To-win-chē-bă), Ko-ko-he'-bă, Wo'-pom-nutch (or Wo-pung'witch), Em'-tim'-bitch, Wuk-să-che, Pot'-wish-ah.

Mill Creek valley, the home of the Em'-tim'-bitch tribe, is a narrow, tortuous and picturesque valley, hemmed in by lofty oak-forested mountains, among which several grassy baldish knobs rise well above the trees. The highest mountains are on the northeast, where the southern continuation of the lofty Pine ridge, clothed along its summit with ponderosa pines and sequoias, cuts off from sight the still higher mountains beyond.

There is no white settlement in the valley, Dunlap in the upper part being merely the name of a ranch postoffice.

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[2] Kroeber himself evidently had some qualms, for he seems to straddle the fence. On page 480 of his valuable Handbook of the Indians of California (B. A. E. Bull. 78) he remarks that the Entimbich "have also sometimes been classed on Monos; but a vocabulary of their dialect establishes them as Yokuts." However, on page 585 of the same volume he admits that "there is some confusion whether they are Yokuts or Mono." And by Mono he means one of a group of related tribes of the Monache-Piute series.

A few years ago Martha Louise Baker in a newspaper article mentioned the En-dim-bitz, Wo-po-noich, and Wuk-sa-chi and correctly placed them as "branches of the Piute tribe" (Fresno Republican, Dec 14, 1924).

At the time of my first visit, during the latter half of October 1903, the Indians were gathering acorns and had already collected large quantities. All day every day the older women were out getting them. The nuts were carried home in gunnysacks that rested on the back and were held in place by the usual flat band of milkweed fiber (called tew hahp) which passes over the front of the head and is fastened to the corners of the sack.

The acorns were of three species—the black oak, *Quercus californicus;* the blue or foothills oak, *Q. douglasi;* and the large valley oak, *Q. lobata.* The blue and valley oaks are abundant but the favorite species, the black oak, does not reach down into the valley, so the Indians must go up the slopes for its acorns. The first mush of the season was already cooking, and all the women had looped sticks for stirring the hot stones that kept it boiling in the baskets.

One day about two miles above Dunlap I met an old man and a woman gathering acorns. The woman was large and strong, well built though rather fat, and vigorous for her age, with a big head and plenty of character and determination—evidently a person of intelligence and force. She had much to say and said it rapidly and with emphasis, but I didn't understand enough of her language to know what she was talking about. I was told that she had two husbands, and that it is not unusual for an Em′-tim′-bitch woman to take a second husband when her man grows old.

The Em′-tim′-bitch said that in former times they had several large villages scattered up and down the valley, each containing a hundred to a hundred and fifty people. The largest was near the spot where the Dunlap postoffice stood in 1903. A division or subtribe was called Tim-katch.

At the time of my first visit the Indians, except one family, were Em′-tim′-bitch. The head man or leader was Al-al′chă, commonly called "Big Dick" or "Tanner Dick." The single non-Em′-tim′-bitch family consisted of Jim Tippeno and wife, his children and mother. They were Wik-tchum′-ne and had come from Lemon Cove on Kaweah river.

Many of the Em′-tim′-bitch owned their own land, much of which was fenced. They were living in rough board houses, owned some cattle and horses, and were much annoyed by white men who pastured stock on their land.

About the end of October 1919 a full-blood Em′-tim′-bitch woman died. She was said to be about eighty years old and went by the name of Nancy Jane Jack. The other Indians laid her body on the floor and covered it with a white cloth. The women came, with their hair hanging down their backs according to tribal custom, and standing around the body began the death wail, which was kept up for hours. In former times the death-cry

dance lasted all night, and while the body was being carried around the grave every member of the tribe had to jump over it. This was believed to keep them from dying for a long time.

The men made a coffin of rough lumber and into it put the body, wrapped in quilts, and also her own clothes.

The burying ground had been used so long "that it was hard to dig into the soft earth without digging up a body" (Fresno Republican, Nov. 9, 1919).

REFERENCES AND SYNONYMY

Em'-tim'-bitch (or Em-tim'-pitch). Merriam, Dist. Ind. Tribes in So. Sierra. Science, n. s., 19: 916, 1904.

Enatbicha plural of Endimbich. See below.

Endembich. See Endimbich below.

Endimbich. Kroeber, Shoshonean Dialects of Calif., 68, 120; also note at bottom 165 [erroneous reference of tribe to Yokut stock]; also vocab. 71–89, 1907. (Written also Intimpich, ibid., 68; Indimbich, Entimbich, Endembich, plural Enatbicha, ibid., 120).

En-dim-bitz. Martha Louise Baker, Fresno Republican, Dec. 14, 1924.

En-Tennysich. Gen. E. F. Beale (letter to Gov. J. Neely Johnson, July 12, 1856), San Francisco Herald, July 13, 1856; also Bonsal's "Edward Fitzgerald Beale," 193, 1912.

Entimbich. See Endimbich above.

Eu-tem-pe-che's. Major H. W. Wessells, House Ex. Doc. 76, 34th Cong., 3d Sess., 32, 1857 (typog. error for En-tem-pe-che).

Indimbich. See Endimbich above.

In-tem-peach-es. W. M. Ryer, Senate Ex. Doc. 61, 32d Cong., 1st Sess., 22, 1852.

Intempeachus. Calif. Chronicle, Dec. 20, 1853 (after San Joaquin Republican).

Intimbich. Handbook of the American Indians, pt. 1, 611, 932, 1907.

In-tim-peach. 18 Calif. Treaties (1852) Senate Reprint 3, 10, 1905. Written Intimpeaches, ibid., 12.

Intimpeach. C. C. Royce, 18th Ann. Rept. Bur. Am. Ethn. for 1896–97, pt. 2, 955, 1899 [publ. 1901].

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Intimpich. See Endimbich above.

Tenisichs. A. S. Taylor, Calif. Farmer, June 8, 1860 (after Beale 1856); Bancroft, Native Races, 1: 456, 1874 (after Taylor).

Ytimpabiches. Handbook of the American Indians, pt. 1, 611, 1907 (after Dominguez and Escalante 1776), Doc. Hist. Mex. 2d S, 1: 537, 1854. [Erroneously included under Intimbich in Handbook].

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CHEMICAL EXAMINATION OF PREHISTORIC SMUDGED WARES

By FLORENCE M. HAWLEY

IN A former paper on Prehistoric Pottery Paints (AMERICAN ANTHROPOLOGIST, 31: 731–749) the subject of composition and method of application of the black color which covers the interior of some Southwestern wares was taken up. Since then the question has arisen concerning the possibility of this black coloring, heretofore called a smudge, being black iron oxide, magnetite, Fe_3O_4, produced by heating in a reducing atmosphere the vessel over which a slip of red iron oxide, hematite, Fe_2O_3, had previously been applied. As both smudging and the reduction of Fe_2O_3 to Fe_3O_4 require a reducing atmosphere, which the Indian probably produced by covering the surface of the vessel with smoldering organic matter, the chemical reaction rather than the method of color application was in question. As examples of the type of ware concerned may be cited the red with black burnished interior so common at Flagstaff, the plain red and the corrugated with black burnished interior found on the Upper and Middle Gila, and the late red-on-buff with black interior of the southern Middle Gila.

Although this subject had been previously considered, it seemed advisable to obtain further and more detailed chemical tests. For this a sherd from a vessel that looked typical of the black interior type was used. Its black coloring disappeared when subjected to red heat in an oxidizing atmosphere, in the manner typical of the sherds previously tested and described in the former paper. While sweeping statements can not be made on the evidence of a single sherd, we know from its examination that smudging does account for the black interiors of some of this ware, and the fact that the sherd tested appeared to be in all ways typical of the type concerned would suggest that the results obtained on it might be characteristic of a large proportion of the black interior types if not of them all.

The following tests were performed by F. G. Hawley, who had collaborated in some of the original chemical work on pottery paints.

TESTS ON POTTERY SMUDGE

These tests were made on a broken bowl about 8 or 9 inches in diameter which was found at Burch near Miami, Arizona. The vessel wall was about 1/8 to 3/16 inch thick, rather soft and porous. On the outside was a reddish slip; on the inside it was very smooth, glossy, and black, and except for the unusually thin walls the vessel seemed to be a typical piece. There was no black streak of unburned carbonaceous matter to be seen in the interior center of the walls, as the thinness of the

pottery, together with the thorough burning it had received, had completely oxidized any carbonaceous matter that originally may have been present. The wall for about one-third of the way through was dark, which the following experiments indicated was due to penetration of that carbon smudge which produced the black surface.

Careful examination with a good microscope showed plainly that the black color did not have the nature of a coating of paint on the surface of the pottery; the carbon had penetrated the pores in the body of the sherd and acted more like a dye than a paint. When it was ignited in a muffle, the carbon quickly burned out, leaving the sherd a light creamy buff color, as smooth and polished as before

With a steel scraper, 0.6 gm. of fine scrapings was removed from about 15 square inches of the inner surface of the bowl. The scraping penetrated less than 0.01 of an inch. The material was pulverized still finer and 0.5 gm put in a platinum dish with an excess of HCl and H_2F_2 (HF). This mixture will dissolve any ordinary constituent of pottery, including iron, but does not dissolve carbon. The treatment was repeated, and then the residue was evaporated dry several times with HCl to remove all fluorides. On dissolving the residue in dilute HCl, there was left some black amorphous carbon that was so light and fine it would not settle for a long time. It looked and acted like lampblack. This was filtered off on an asbestos pad, and the carbon was oxidized to CO_2, absorbed in the standard manner, and weighed. 1.3% carbon was found. This is not very much, but since it exists in the interstices of the clay, not as a surface coating, is extremely light, and has a remarkably high covering power, it seems to be sufficient to account for all of the black color.

Before making this determination, a piece of the pottery was slowly heated to see if any fumes or smoke would come off, which would indicate that there might be volatile carbonaceous matter present, such as grease, oil, vegetal extracts, etc., that might vitiate the assay for carbon. None was seen.

The filtrate from the carbon determination was run for iron and 4.4% was found. This is about a normal amount for an impure clay that burns to a creamy buff color. Some of the bowl was broken up rather finely and a lot of small pieces showing little or no black color were taken, ground, and tested for iron. 4.5% was found, indicating that no more iron oxide was present in the black surface than in the interior paste of the wall.

Undoubtedly much of the iron exists as some form of silicate, but some may exist as free oxide, which, when burned to Fe_2O_3 gives the slight reddish cast to the clay. This, on heating in a reducing atmosphere, should form a little Fe_3O_4. This is black, but considering that it does not exist as a coating on the surface, but is diffused throughout the clay, and that Fe_3O_4 is a very inefficient pigment, it should not have much to do with the black color.

When making experiments on reducing the Fe_2O_3 in pottery sherds, it should be remembered that if they are heated in a reducing gas containing carbon, in addition to reducing Fe_2O_3 to Fe_3O_4, there generally will be much carbon liberated by catalytic action, and deposited on the sherd. The reduction can be easily done by

hydrogen at a comparatively low temperature, and no carbon can be deposited; at a high temperature it would be further reduced to metallic iron. A sherd of this bowl that had been well oxidized so that the color was a very light buff was reduced by hydrogen as described. The color darkened perceptibly, but still it was only a light brownish gray, proving that while a small amount of Fe_3O_4 might be present, it had little effect on the color. Scrapings from the reduced piece were tested by a strong electromagnet, but showed little or no magnetism, as they would if much Fe_3O_4 (magnetite) had been present. On a control, one percent of Fe_3O_4 mixed with clay showed considerable magnetism.

The last test was to determine whether a sherd would gain or lose weight when heated. It was first well extracted with dilute HCl to remove carbonates, then thoroughly washed many times in boiling distilled water and finally heated some time in a muffle. The heat was kept just below redness, so as not to burn out the carbon. It was cooled and weighed and then heated to medium redness until all carbon was oxidized, and again cooled and weighed.

Original weight (after first heating)	2.9794 gm
Weight after burning off carbon	2.9550 gm
Weight of carbon	.0244 gm

This is nearly .0183%. It is lower than the regular carbon assay because part of the sherd contained no carbon, and possibly because there was a very little Fe_3O_4 present which took on a little weight. It shows, however, that any Fe_3O_4 is entirely subordinate to carbon.

Finally, it may be added that since Fe_2O_3 is a more efficient pigment than Fe_3O_4, any black piece of pottery presumably containing Fe_3O_4 should turn to a strong red color when it was oxidized to Fe_2O_3. This, however, was not the case. When the black paint was oxidized, only a very faint trace of red was found.

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THE SPIRIT THEORY IN EARLY MEDICINE[1]

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QUICK to agree with Tennyson's hero that we "are heir of all the ages," we "announce with confidence" or "point with pride" that in the twentieth century civilization has reached an enviable peak. How far this is from being universally true is apparent when we observe the medical practices of guillible and superstitious people, who in their search for a catholicon have not yet learned with Sir Thomas Browne that death alone is the cure of all diseases. Yet we need not look to the tropics or to the antipodes to find proofs of man's eagerness to be deceived. Radios and twelve-cylinder racers are no guarantee against over-credulity; superstition may go clad in plus-fours or opera hats, in sables or glove silk. Neither Russia nor China is altogether unenlightened, according to modern standards—witness the alacrity with which Oriental and Muscovite have adopted, with dim perception of consequences, Western garb, machinery, political methods—yet in those countries people are still occasionally beaten to death or buried alive at the instigation of local spirit doctors. In Harlem, in the heart of New York city, there are today, according to credible authority, more than a score of voodoo doctors, or negro shamans, reaping enormous yearly harvests from the purses of their infatuated brethren. A writer in central Pennsylvania, lamenting the benighted condition of that region, observes that

> we consult "Powwow doctors"; we are "hexed" by those who have a grudge against us; we decorate our barns with odd designs to ward off the "evil eye"; we pass a baby three times around the leg of a table to cure the "liver groans!"

And in a circular, distributed from Atlantic City, a Brooklyn "doctor" announces, for cash or credit, with prices ranging from $15 to $1000, "Spells of all kinds broken or released. Love apples in all forms. Black Cat's Ankle Dust, and all kinds of highly appreciated roots and herbs."

All of which, not to multiply illustrations, may appear shocking and inexcusable to those of us who forget how slightly we are removed from the atavistic, how strong the primal ties between the aborigine and the élite. Yet it should not be difficult for us to trace back to the despised and ignorant medicine-man a far-reaching indebtedness. From the practices of the sometimes barbarous, sometimes ridiculous shaman have derived various of our most scientific and effective methods of treating disease; to

[1] A lecture delivered before the Anthropological Society of Washington.

say nothing of numerous and not altogether shadowy resemblances between religious ideas and civic institutions which heathen blindness and Christian progressiveness often possess in common.

The when of the primitive doctor's evolution is not ascertainable, the why is reasonably obvious. One day, in the Philippine islands, I observed several Visayan natives engaged in smearing something over the doors and windows of a hut. In the air hung the familiar but unpleasant odor of garlic. Wondering, I asked what was the idea. A spokesman replied that a child had just been born in the house, which was being fumigated with garlic in order to keep out the asuangs—pernicious little spirits particularly fond of new-born children. When the malicious spirits smell the garlic, they take flight, for like some of us they cannot abide the pervasive and characteristic odor of the melting-pot.

Asuangs are not, of course, the only spirits supposed to work mischief. According to primitive notions there are ghosts, demons, spirits everywhere. The very air is filled with them. If a man falls ill, spirits are responsible. If he loses his knife, hatchet, head-ax, or spear, a spirit took it away. If he accidentally trips over a stone, a spirit placed it in his path. Why, we ask, should primitive peoples live a world so filled with baleful creatures? It is not a pleasant world in which to live. The answer is simple: evil spirits, according to the crude notions of the savage, are directly responsible for the presence of bad luck, sickness, disease, and death. In his crude gropings after a philosophy to explain his woes, the primitive man, passing over indifference and agnosticism, settles upon a third alternative, faith: there must be something in which to believe, so he manufactures for himself an unseen foe responsible for the falling trees which maim his friends, for the beasts which devour them, and for the abysmal wickedness of human enemies.

Dreams are the storehouses from which the primitive man draws his illusory spirits. In dreams he sees once more his imperious and implacable ancestors, and concludes, therefore, that they must be alive; even though, waking, he remembers that he himself had helped to dispose of their bodies. He dreams of dead enemies, and in the morning imagines that he is surrounded by their ghosts. During their earthly existence, these ancestors had maltreated him and these enemies had worked against him. Since death has made them invisible and carried them beyond his reach, he thinks their power has been increased, and naturally he ascribes his woes to their ghosts and spirits. Sickness, especially, he finds hard to explain. Who is responsible for it? An evil spirit, he concludes, has gained an entrance into his body and is tormenting it by way of compensation for earlier deeds.

Thus, the Finns believe that the souls of the dead feast on the hearts and entrails of the living. Spirits do not spare even a near relative, for these shades, being something like human, must eat and drink.[2] The Zulu of Africa offer the sacrifice of an ox to the dead ancestor of whom a sick man dreams.[3] Australian tribes believe sickness is caused by a ghost eating the liver of the victim.[4] In Samoa illness and death are thought to be occasioned by the souls of the dead which have crept into the head and stomach of the living.[5] In cases of epilepsy, when the patient falls to the ground, foams at the mouth, his arms and legs torn by convulsions, the victim must be possessed by another spirit. Surely no man's own spirit would treat his body so.

Similarly, spirit activity is the cause of all bad luck, sickness, and death. When a savage falls ill, it is not of hostile germs or bacteria that he thinks. He calls in a doctor who knows how to deal with the malicious spirit responsible for his sickness and who, instead of administering ingredients to calm nerves and to kill germs, sets about soothing and banishing the possessing spirit.

The man who attends to the sick and demented is something more than a doctor. In the language of the North American Indians he is called the Medicine Man, or the Mystery Man—for "medicine" is used by the aborigines of this country to describe anything sacred, mysterious, or of wonderful power or efficacy. Hence, the medicine-man is not only doctor, but diviner, rain-maker, soothsayer, prophet, priest, and sometimes chief or king as well. He is, in short, the great man of his tribe. Sitting Bull, for example, the leader of the Custer massacre, was a medicine-man.

The medicine-man answers to many names, for he is called among various peoples, the shaman, the angakok, the voodoo-man, the obi-man, the conjuror, the magician, the wizard, and the sorcerer. But how does he rise to power? Sometimes he inherits the position from his father, but more often he has some unusual qualification that fits him especially for the post of mediator between the human and superhuman worlds.

A typical case was that of Enchong, whom I met while serving with my regiment in the Philippine islands, and who was one of the most famous "spit-doctors" of that archipelago. He told me, when I asked him, of how he became a doctor:

[2] J. Smirnov, Le Cannibalisme et les Sacrifices humaines chez les Ancêtres des Finnois orientaux. Congrés international d' Anthropologie et d'Archéologie préhistorique, 11:316, 1893.

[3] Encyclopaedia Britannica, ed. 9, 7:61.

[4] E. B. Tylor, Anthropology, 354.

[5] Encyclopaedia Britannica, ed. 9, 7:61.

One day, as I was walking in the San Mateo mountains, I became very tired. I lay down at the foot of a tree to rest and refresh myself. Sleep overtook me. I saw a wonderful being in my dream. This being had long, white whiskers, and made mysterious motions with his hands, arms, and legs. And, then, he talked with me. And this is what he said:

"Enchong, you are appointed chief doctor in these Islands. By virtue of this appointment you are empowered to heal all the sick that seek your aid. Spit upon them and you will receive their eternal gratitude."

When I returned to my barrio [native village] I told everybody about my dream, and soon the sick from far and near were coming to my door. I healed them all by rubbing them with my saliva.

Enchong, like quack doctors everywhere, was a great publicity seeker. His cures were notorious, and he was besieged by rich and poor alike for his miraculous saliva rubs. Civil authorities got word of his activities, however, declared him insane, and committed him to an asylum. And that was the end of Enchong.

Other doctors' fame comes by different routes. A Pima Indian had only to recover from a rattlesnake bite upon the hand or near the heart, and he was elected chief wizard of the community[6]—rather a stiff entrance requirement, but then the position had its rewards. In Australia, again, a man was made a shaman as the reward of stupidly sitting upon the wrong end of the limb he was cutting from a tree, and climbing out unharmed when it fell to the ground.[7]

Spirits are responsible for the nomination and election of all medicine-men, and, naturally enough, insanity is an asset rather than a liability. The fact that an insane person is different from other people is proof positive that he has an indwelling spirit. Being, by virtue of his divinity, upon intimate terms with the gods, and possessing a knowledge of their nature and disposition, he is admirably equipped for devising ways and means of procuring celestial benefactions.

The thoroughfare of shamanic honors, of being initiated into the mysteries of the sacred calling and getting into the necessary inspired state is a hard road to travel. The medicine-man must often resort to sleeplessness, seclusion, and protracted brooding upon some morbid fancy in order to bring about hallucinations which prove his superior qualifications, both to himself and to his fellow-tribesmen. He is usually successful, for it is well known to medical science that the more frequently these diseased conditions of the mind are sought, the more readily they are found. The shaman tries

[6] Frank Russell, Pima Indians. Bureau of Ethnology, Annual Report 26: 257.

[7] R. Brough Smyth, The Aborigines of Victoria, 465.

repeatedly, until finally the nature he has tried so assiduously to induce by artificial means comes without seeking. He then, without effort, possesses hallucinations in all the garb of reality.

The horseplay initiation of college fraternities resembles somewhat the ordeal the shaman has to undergo when publicly inducted into office. Among the Dyak of Borneo the initiation ceremony is an elaborate process. The Menangs, or priests, lead the neophyte into a curtained apartment, while a medicine-man is posted on the outside to tell the awestruck spectators what is taking place within. The officiating priests, the publicity man outside announces, cut open the young man's head and take out his brains, for, says he, the candidate's mind must be clean and clear to enable him to penetrate the mysteries of evil spirits and the intricacies of disease. After having carefully washed the brains, the operating priest surgeons replace them. The priests then insert gold dust into the eyes of the candidate in order to give him keenness and strength of sight that he may see the soul wherever it may wander. The Menangs then plant barbed hooks upon the neophyte's finger-tips, so that he may seize the soul and hold it fast, and, finally, they pierce his heart with an arrow to make him tender-hearted. At last the new-fledged medicine-man emerges from the sanctuary looking fit and fine. We need hardly explain that all that was done to him behind the drawn curtains was a series of symbolic actions, representing the terrible things as they were described.[8]

Initiation among the Tschi-speaking peoples of the west coast of Africa is a more serious matter. The candidate there must undergo a purity test. A circle, three feet in diameter, is formed by glowing embers, and the neophyte is made to step within its clear space. Rum, kerosene oil, and other inflammable liquids are thrown upon the embers, so that the flames leap high in the air, sometimes higher than a man's head. After an interval this process is repeated a second and a third time, and the ordeal is over. If the candidate survives all three trials without sustaining injury, he is thought to be pure—the gods have protected their favorite from the fire. If, however, the intense heat compels him to leap outside the circle, or if he receives a burn or other injury, he is believed to be impure. Only those candidates, whom the gods especially love, come through the fire unscathed, and, as a matter of course, become highly honored medicine-men.[9]

Woman has her rights, too. Among the Karok of California, for instance,

[8] H. Ling Roth, Natives of Sarawak and British North Borneo, 280–281 (quoting Archdeacon Perham). Journal of Straits Asiatic Society, no. 19, 1887.

[9] A. B. Ellis, Tshi-Speaking Peoples, 138–139.

there are two classes of doctors: root doctors and barking doctors. The barking doctor is by far the more important person and is generally a woman. It is her office to diagnose sick cases. This she does by squatting upon her haunches, dog-fashion, and barking for hours. In addition to her diagnostic office, she doctors "poisoned" cases. This condition is very common among her people, for when sick they think they have fallen victims to witches who cause some noxious reptile or animal to grow through the skin into the viscera or intestines. When so attacked they apply to the barking doctor, who first locates the intruder and then sucks the "possessed" spot until the skin is broken and the blood flows. After having completed this part of the treatment, the shamaness takes an emetic and contrives to make it appear that she vomits up a frog or some other small animal which she pretends she sucked out of the patient.[10]

In east central Africa the medicine woman combines with her functions of healing and prophecy the office of witch-detective, and in this capacity is the most terrible character in village life. It is to her, supposedly, that the gods, through visions and dreams, make known their will. When she sees the spirits face to face—always in the dead hours of night—she begins her operations by raving and screaming. She continues until the entire village is astir and she herself falls prostrate to the ground, where she remains in a state of catalepsy while the awe-struck villagers gather around, awaiting her revelations. At last she begins to speak, and her words are accepted as commands of the gods. Even should she command human sacrifices she must be obeyed.[11]

The position of medicine woman is no petty or despised office. In Borneo, as a matter of fact, the very notion of a medicine woman is so full of mystery and power that male shamans deliberately assume the costumes and habits of women, and are treated like women and do women's work. Such characters, known as manang bali, are most extraordinary persons, and in view of the enhanced prestige, which the idea of the feminine carries, go about their duties seemingly untroubled by the Nordic's masculine aversion to effeminacy.[12]

Medicine men and women are quick to appreciate the value of cooperation. They often work in associations, being banded together for their common interest. Among the Tschi-speaking peoples priests circulate bulletins of information conveying the intelligence of what persons are

[10] S. Powers, The Tribes of California. Contributions to North American Ethnology, 3: 26.

[11] J. Macdonald, East Central Africal Customs. Journ. Roy. Anth. Inst., 22: 105–107.

[12] H. Ling Roth, *op. cit.*, 270, quoting Brooke Low.

likely to seek advice, and upon what subject. A priest will sometimes frankly tell a client that his own god refuses to accord the assistance required, and pass him on to another shaman. The applicant, when he presents his cause to the second priest, learns to his amazement that the new doctor already knows the purpose of his visit.[13]

The medicine-man is a wise individual; he understands his people, and knows how to deal with them. Realizing that fear and intimidation are powerful expedients, he makes good use of these means of offense and defense. Such a weapon is the detective function, referred to in connection with medicine women. In time of adversity and disaster, the savage asks: "Who prevailed upon the spirits to despoil the crops or slay the cattle? Who caused the unclean spirit to enter the patient, and bring about his sickness and death?" For "proper" answers, these questions are always submitted to the servant of the gods—the medicine-man. Woe, then, unto those individuals who are *persona non grata* with the shaman! Upon them will he throw the responsibility of the misfortune, and the end of the recalcitrants will not be peace.

Some of the ruder folk of Australia are unaware that death is ever owing to invisible causes. When, therefore, a man dies the belief prevails that it is only because some other person has killed him. The shaman is quick to turn this conviction to account. If murder actually has been committed, all is clear sailing, for in that case the medicine man is required merely to detect the criminal.[14] If there has been no homicide, however, or if nobody knows who gave the fatal blow, the shaman is not at a loss, for immediately after death has taken place he unhesitatingly asserts that he received the name of the murderer in the dying confession, and bluffingly points out the direction in which the criminal lives. It may take several years to track down the insubordinate, but sooner or later the resourceful medicine-man settles the score.[15]

Among the Tschi-speaking peoples, priests are frequently employed to prevail upon the spirits to send death to persons who have offended or injured the applicants. The individuals against whom these priests work their evil magic sometimes die natural deaths, and in such coincidences the shamans take the credit, thus magnifying their office. In case the offender does not die from disease or accident, however, the priests, if they be

[13] A. B. Ellis, *op. cit.*, 128–129.

[14] A. W. Howitt, The Native Tribes of Southeastern Australia, 357; On Australian Medicine-Men (Journ. Roy. Anth. Inst., 16: 26); Spencer and Gillen, The Native Tribes of Central Australia, 46–48.

[15] Spencer and Gillen, The Native Tribes of Central Australia, 533.

sufficiently interested, cause poison to be administered secretly to the hapless individual whose death is desired.[16]

The medicine-man, therefore, by means of his detective function, his power of cunning, and his superior resourcefulness, can gratify his choicest malices, punish the recreant, whip the disobedient into line, and at the same time intensify to a superlative degree the superstition and awe which enshroud his own person. Because of the sentiments thus inspired he controls the savage tribe and moulds the community after his own desire.

It is plain, therefore, that an individual occupying an office so plenteous in possibility must, as already suggested, hold within his group a position of tremendous importance. The conviction of the shaman's supernatural origin, the effect of his adventitious aids, his superior mental and moral qualities in addition to the exhibition of truly wonderful powers, cause a feeling of awe which does not fail to assist in extending his spiritual sway over all classes. It is, accordingly, to the advantage of every tribal member to ingratiate himself with the medicine-man. If a person can so influence the spirits that they will do his behest, it is obvious that everybody will strive to the utmost to make friends with him. Even if he has no mystical power, since by reason of his detective function he can throw the blame of evil fortune upon the insubordinate, every person in the society will show him respect, reverence, and even worship. The shaman is naturally keen in turning to advantage the unusual esteem and privilege which come to him by virtue of his office; and it is not surprising that he should use his power to elevate himself to the position of chief.[17] The medicine-man in some cases exercises not only kingly power but pretends divinity;[18] he "goes from strength to strength."

The shaman even invades the realms of the occult and takes unto himself the office of prophet. It is asserted that animals—pigs, dogs, grouse, sheep, and the like—are sentient to atmospheric changes. When slugs enter houses and cattle stand closely together, with their backs to the wind, a naturalist will conclude that a storm is at hand. As we go higher among the various forms of life, however, we find this atmospheric sensitivity becoming weaker and weaker, and when we arrive at civilization we discover that cultured man has, for the most part, lost the power to forecast through feelings and sensations. But even in civilization some in-

[16] A. B. Ellis, *op. cit.*, 142–145.

[17] A. S. Thompson, The Story of New Zealand, Past and Present, 114; H. R. Schoolcraft, Information Respecting the Indian Tribes of the United States, 4: 495; G. Turner, Samoa, A Hundred Years Ago and Long Before, 278.

[18] A. Bastian, Der Mensch in der Geschichte, 468.

dividuals through rheumatic pains or sense of oppression can foretell the approaching storm. Many medicine-men possess this meteorological sense, and, by predicting the approach of storm and calm, fair weather and foul, come to be regarded as possessing supernatural power.

Shamans do not confine their prophesying powers to the weather. They have a readiness at predicting other events with an accuracy which often seems uncanny. Some years ago, in northwestern California, a Kelta Indian murdered four persons, including Stockton, the Indian agent, and made good his escape. The murders created much excitement and speculation among the other Indians upon the reservation. A Kelta medicine-man, one day, suddenly cried out that he saw the fugitive at that moment with his spiritual eyes. He then proceeded to describe minutely the place where the criminal was concealed, told how long he had been there, and many other details. Subsequent events showed the spirit doctor to be substantially correct in everything he said.[19]

The ability to ward off bad luck and to bring good luck is the medicine-man's chief claim to distinction. The worst luck possible to a pastoral or agricultural people is a season of drought; the best luck imaginable an abundance of rain. When vegetation is dying, when there is no water to drink, when man and beast have no nourishment, the individual, who can make the heavens open and give forth rain, is a person of importance. Rain-making is one of the great methods by which the shaman seeks to establish his reputation. If his power stands the test here, he can rest assured of going through life with fame untarnished and place secure. Now no man by any flash of genius or by any measure of effort has ever succeeded in bringing about the proper atmospheric conditions necessary to produce rain. But whether or not the medicine-man is conscious of his impotence, he never allows his people to doubt his ability to open the heavens, and in view of their belief in sympathetic magic he sets to work as a rain magician. One of the principles of sympathetic magic is that any effect can be caused by imitation. Thus, in Brazil, it is the custom of the rain-maker to mount the roof of his house, vigorously rattle a dried gourd containing pebbles, in representation of thunder, and scatter water upon the ground, to prevail upon the gods to send rain.[20] And whether rain falls sooner or later, the shaman need have no fear of losing caste; for when rain comes he takes the credit, and his people, since they are unable to appreciate negative evidence, allow one success to outweigh many failures.

[19] S. Powers, *op. cit.*, 91.

[20] D. G. Brinton, The Myths of the New World, 184; Brinton, Religions of Primitive Peoples, 174.

Sometimes, however, the medicine-man is placed in embarrassing situations, from which he must use his wits to extricate himself. On one occasion, for example, an Australian rain-maker, after calling upon the spirits, planted his rain-stick in the ground. When it rained it poured, and the country was flooded. Later, the shaman, in the presence of his constituents, boasted of his success to a white man. The white man retorted, "If you made the rain, cause it now to cease raining, for the crops are being ruined." Whereupon the rain-maker naïvely explained that such a feat was impossible, because the floods had covered the rain-stick so that he could not find and remove it. The child-like natives accepted this explanation without question.[21]

It is evident, however, that this clever apologist is not always able to make his excuses tell. A plague, which killed many victims in a single day, once prevailed throughout Pima villages. Three medicine-men, who were suspected of having caused the disease, were put to death, "and nobody was sick any more."[22] Among the Bari of the upper Nile, the rain-maker, who does not succeed in bringing rain when it is needed, loses not only his reputation but his head.[23]

During the British-Ashanti war of 1871–1874, a priest in the Ashanti camp was required to inform the public upon which day the English gunboat, lying at anchor, would put out to sea. After making the proper conjuration he announced that the ship would depart upon the following day. The next day at sunrise, instead of the boat departing, two other enemy craft hove ominously upon the horizon. The priest was beheaded.[24]

On the other hand, particularly if the practitioner has been successful, he is well paid for his services.

Here is a Sarawak doctor's price list: For getting back a human soul, six gallons of rice; for extracting an evil spirit, six gallons of rice; for securing the soul of the rice at harvest festivals, three cups of rice from each family in the neighborhood.[25]

The modern doctor's custom of making his fee proportional to the financial ability of the patient is, no doubt, the survival of a savage antecedent. The native doctor of the Makhelchel (Clear Lake Pomo) of northeastern California had a clever method of fixing his honorarium. He wrap-

[21] W. E. Roth, Superstition, Magic, and Medicine. North Queensland Ethnography Bull. 5: 9–10, 1903.

[22] F. Russel, *op. cit.*, 48, 59.

[23] F. Ratzel, History of Mankind, 3: 26.

[24] A. B. Ellis, *op. cit.*, 124.

[25] H. L. Roth, *op. cit.*, 267, note.

ped the patient in blankets, and laid him upon the ground with his back to the fire. He next drove a stake into the ground near the head of the sick man, and then bade family and friends of the invalid to stretch strings of shell beads (money) from the stake to ankles, knees, elbows, and wrists of the sufferer. When the medicine-man had "pow-wowed" sufficiently to make a well man sick, he pocketed the money.[26]

The Dakota often gave a horse in payment for medical services.[27] In Korea the sums demanded by the shamans were at one time estimated to aggregate annually two and one-half million dollars.[28] Sickness is so costly in Nias that persons often sell themselves into slavery to procure the funds necessary for medical aid.[29]

Is the shaman sincere about his "pow-wowing" or is he an unprincipled charlatan and unmitigated knave? Is he a conscious impostor and contemptible quack or an honest man, doing his best according to the light given him? Candor leads to the assertion that this man is usually quite sincere and enters upon his profession in good faith. There are, of course, black sheep in every flock; but the majority of medicine-men honestly practice the principles of their art. In proof of this it is only necessary to observe that when a shaman becomes ill he calls in other shamans to treat him.[30]

Does anything positive, however, come from this hocus pocus treatment? Again the answer must be in the affirmative. Even though the efforts of the medicine men may seem well nigh imbecile, amazing results have been achieved by them. The shamans of the Similkameen (Okanagan) of British Columbia are credited with curing persons apparently in the last stages of consumption.[31] In Liberia white people afflicted by certain kinds of tropical diseases have been cured by native doctors, after European medical men had confessed their inability to do anything for the patients.[32] Concerning the success of a native healer of West Africa, it is related,

> We met a woman lately who had come from Freetown with a dreadful disease in her face, and our doctors could do nothing for her; and so her husband brought her right up here in the interior to one of these "medicine men" to be cured "country

[26] S. Powers, *op. cit.*, 216–217.

[27] Max Bartels, Die Medicin der Naturvölker, 58–59.

[28] Isabella B. Bishop, Korea and her Neighbors, 403.

[29] Max Bartels, *op. cit.*, 59.

[30] E. M. Curr, The Australian Race, 1: 48, 2: 75; D. G. Brinton, Religions of Primitive Peoples, 58; Max Bartels, *op. cit.*, 92.

[31] Mrs. S. S. Allison, An Account of the Similkameen Indians of British Columbia. Journ. Roy. Anthro. Inst., 21: 311, 1892.

[32] Max Bartels, *op. cit.*, 50.

fashion," and she is getting better every day. Her suffering was intense, but now she has absolutely no pain, and is evidently on the high road to recovery.[33]

The way has now been cleared for an inquiry into the social significance of the shaman. Some writers assert that he is a parasite, that his influence has been altogether for bad, and that only after he has been routed from his entrenchments can civilization make any progress. It must be admitted that the medicine-man does no productive physical work, and that, therefore, he may technically be called a parasite. Granting this, however, he produces indirectly, and, therefore, his efforts have not been in vain. He and his associates, supplied by other classes with bodily sustenance, constitute a leisure class. Without a leisure class it would seem impossible among savage as well as civilized peoples to attain any intellectual progress. For the leisure class the struggle for existence is eliminated, and these individuals of necessity have a surplus of mental energy to expend, and a large amount of leisure time to be consumed. That this energy and time have not been altogether wasted we have direct evidence. The priests of New Zealand, for example, turned to account their leisure time by acquiring skill in wood carving and in other arts; the shamans of the ancient Mexicans and Peruvians became adepts at mixing colors, at painting, at drawing hieroglyphics, at composing music and in reckoning time.[34] In Oceania and central California the religious leaders gave careful physical, mental, and moral instruction to the boys and young men of their people.[35] The observation of the heavenly bodies, the adjustment of the calendar, and the pseudo-science of astrology are indebted for their beginnings to the regulation by the priest class of religious festivals. From the study and practice of astrology came the real science of astronomy. Under primitive conditions the intellectual force of tribe and nation centers chiefly in the medicine-man class. The shamans hence become the preservers of the legends and traditions of the tribe and nation; and since they alone of their people are acquainted with the art of writing, it is the members of this leisure class who compile these legends into history. The medicine-man, therefore, was the first musician, painter, teacher, writer, historian, reckoner of time, physician, priest, and astronomer.

The shamanistic class, furthermore, has aided social progress by enforcing an unbending, irresistible discipline upon wild and loosely governed tribes. The civil ruler does much to restrain the savage from cutting and slashing his way through life to the confusion and detriment of the com-

[33] Dorothy Cator, Every-Day Life Among the Head-Hunters, 189.

[34] J. G. Wood, The Natural History of Man, 2: 178; Ratzel, *op. cit.*, 2: 155.

[35] Dixon, Some Aspects of the American Shaman. Journ. Am. Folk-Lore, 10, 1908.

munity in which he lives. The chief to a great extent keeps the commoner within bounds. If the individual does not comply with the chief's laws, he loses his head, and no longer makes himself obnoxious; he generally obeys because he is afraid to disobey. Yet, law can be evaded; its guardian may be off the beat. The masters of the medicine-man, however, are omnipresent at all times and the fear of human vengeance is not a circumstance to the fear of the gods. The chief can lash a culprit or turn him out of his holdings, but the gods can torment him both in this world and in the world to come. While the primitive man, therefore, might fail to conform with regulated conduct, he cannot forget that the gods and their representative are not mocked. As an illustration of the way in which fear of the supernatural works out in savage life, it is only necessary to say that among sundry peoples this fear is so intense that brave young men sometimes die of fright upon discovering that they have unwittingly violated one of the shaman's regulations.[36] Many of these priestly laws enforce labor, thrift, personal cleanliness, chastity, fidelity between husband and wife; they require obedience to the regulations of the cult; they demand self-sacrifice, restrict personal freedom, prescribe the renunciation of pleasure and property, and, in general, are quite effective in disciplining savage peoples into an approximately fixed code of conduct. In view, therefore, of the shaman's service as a disciplinarian can it truthfully be affirmed that his presence in society has been a detriment?

The medicine-men, moreover, cooperate with the civil powers in enforcing submission to political authority as in a case which the writer observed at Bontoc, in the mountain province of Northern Luzon, Philippine islands. A Bontoc Igorot was serving in the Philippine constabulary when he sickened and died from pneumonia. At the funeral his relatives, believing he had been murdered by Benguet Igorot, traditional enemies of their clan, nearly prevailed upon the Bontoc people to make a head-hunting raid upon the villages of Benguet for blood revenge. The United States authorities assembled the Bontoc priests and explained to them the real cause of the death. Those shamans then persuaded the angry relatives that their suspicions were unfounded, and the trouble was averted.

It is in the field of medicine, however, that the shaman's contribution to social culture is most apparent. When called to the bedside of a sufferer, the medicine-man, like any other practitioner, first diagnoses the case. The diagnosis consists in determining whether the sickness is due to the influence of a *friendly* or *unfriendly* spirit. If an unfriendly spirit is present, the doctor sets about casting it out.

[36] A. G. Keller, Social Science, 138.

One method of casting out spirits, or exorcism, is that of causing the patient's body to become such a disagreeable habitation that the evil spirit will not remain in it. The shamans of Sumatra, for example, attempt to banish the evil spirit from an insane person by placing the unfortunate in a house and setting fire to the building, leaving the wretch to escape if he can.[37] In other tribes the sick person is fumigated, made to swallow nauseous substances and drenched with foul concoctions which only the savage imagination could conceive—all for the distinct purpose of disgusting and driving out the unseen intruder. Absurd, says the modern man. And yet the administration of vile-tasting substances for the purpose of routing evil spirits led to the discovery of drugs and medicines which have vomitory and cathartic effects—remedies indispensable in every modern medicine chest.

Physical force is frequently employed by the spirit doctor to expel the disease demon. Among the Columbian Indians, in case of abdominal pains, the medicine-man pressed his clenched fists with great might into the center of the solar plexus.[38] The writer has known many innocent old men and women of the Tagalog people, natives of the Philippine islands, when they were thought to be possessed by vicious spirits, to be cruelly beaten and otherwise maltreated because the doctors believed that in this manner the evil spirit could be exorcised.

Navaho and Ojibwa medicine-men applied a bony tube, similar to a European stethoscope, to the part of the patient's body where the pain was most intense, and sucked in order to give relief.[39] The California Indian doctors had a tube, called the "chacuaco," made from a very hard, black stone. This they used for sucking out the disease spirit.[40] Preposterous, says the citizen of the twentieth century. The therapeutical expedient known as "cupping," however, still in vogue, especially in country districts, had its beginning in this primitive sucking method. The native doctor of Alaska uses the bone of an eagle's wing as a sucking instrument.[41] The transition from sucking with the mouth to a real cupping instrument is here seen. By use of a cupping glass, in case of a boil, for example, the blood is drawn to the surface of the body where the boil is located. The phagocytes, then, combat and destroy the cocci bacilli, which have gained entrance to the tissue spaces, and the patient is relieved. Is it not interesting

[37] William Marsden, The History of Sumatra, 156.
[38] H. H. Bancroft, The Native Races of the Pacific States of North America, 1: 286.
[39] Max Bartels, *op. cit.*, 270.
[40] M. Venegas, Histoire naturelle et civile de la Californie, 1: 126.
[41] Max Bartels, *op. cit.*, 270.

to know that the procedure of cupping, a real scientific measure, was unwittingly hit upon by the shaman, whose intention was not to bring the blood to the periphery, but to abstract an evil spirit?

Another method of exorcism is by kneading and massaging the body. This process as practiced in central Australia has been described as follows by eye-witnesses:

> A middle-aged man fell sick. His illness was at once ascribed to the fact that he had deliberately done what he perfectly well knew was contrary to the custom, and no one was in the least surprised. "Amongst the men in the camp were five doctors, and as the case was evidently a very serious one, they were called into consultation. One of them, a celebrated medicine-man from a neighboring . . . . tribe, gave it as his opinion that the bone of a dead man, attracted by the camp-fire, had entered the body of the patient and was causing all the trouble. The others agreed with this opinion, but, not to be outdone by a stranger, the oldest [home doctor of the tribe] decided that, in addition to the bone, an *arabillia*, or wart of the gum tree, had somehow got inside the man's body. The three less experienced doctors looked very grave, but said nothing beyond the fact that they fully concurred in the diagnosis of their elder colleagues. At all events it was decided that both the bone and the wart must be removed, and under the cover of darkness they were in part [supposed to be] removed after much sucking and rubbing of the patient's body."[42]

Cases of this kind might be multiplied, but one must suffice. The point in question is that the shaman, in spite of an untenable theory, lighted upon a modern method of treatment. For the practice of osteopathy is based upon massaging processes. The osteopath, be it understood, does not pretend to remove an evil spirit or other disturbing agents; his object is to restore dormant organs to normal action. Massaging is recognized by physicians of repute as a therapeutic agency in cases of sprains, bruises, indigestion, and many other complaints. Again our savage friends have anticipated a distinctly modern method.

Fire is regarded by the medicine-man as a powerful means of spirit expulsion. According to his theory fire is caused by spirit activity. Whence came fire? How did man first obtain possession of it? In volcanic regions its discovery is easily explained. It was belched up from the depths of the earth. To the savage mind there is but one explanation of volcanic eruption—it is mysterious, and therefore due to spirit activity. Hence the resulting fire either contains a spirit or is itself a spirit. In non-volcanic territories there is another explanation for the discovery of fire: electrical storms have always occurred over all the earth. Fire, then, must have come from the lightning's flash which ignited the trees of the forest and the

[42] W. B. Spencer and F. J. Gillen, The Northern Tribes of Central Australia, 515–516.

grass of the steppes. Since, however, lightning comes from the skies, it must, in savage thought, be sent by the spirits who abide in the heavenly regions.

Fire crackles, sputters, and inflicts pain. Primitive man ascribes these powers to a spirit in the fire or to the spirit which is the fire itself. Now, since fire either is, or contains a spirit, may it not be used to drive away infernal spirits? This the savage believes, especially since he finds it useful in ridding himself of his mundane foes. Since, therefore, fire can vanquish earthly enemies, it can likewise drive away spirit adversaries. The reasoning is clear.

Thus, among the Yakut,

> a boy whose finger had become inflamed came to the conclusion that a "yor" or spirit, had established itself in the finger. This opinion was shared by a group of bystanders. Desiring to drive out the spirit, the boy took a burning coal and began to apply it around the place while blowing upon it. When the burned flesh began to blister, and then burst into a little crackle, the curious group which had crowded around him flew back with cries of horror. But the wounded boy with a smile of satisfaction said, "You saw how it (*the spirit*) jumped out."[43]

Curiously the medicine-man by his crude employment of fire unconsciously initiated a scientific procedure. Fire is the only infallible germicide known to the scientific world. By it water is purified, surgical instruments are sterilized, and by the cooking of food, germs of disease are destroyed and many a period of sickness thus prevented.

The invaluable process of cauterizing infected bites and wounds goes back to a cure by the Araucanians, by the Gilbert islanders, and by the Indians of southern California.[44] When the shamans of those tribes applied the live coal to an infected wound it was, of course, for the purpose of driving out an evil spirit. What they really did, however, regardless of intentions, was to cauterize the wound.

Water, too, in primitive thought, is believed to have a powerful influence over spirits. The sea rolls, the breakers roar, the waves lash the shore. Floods overwhelm men and beasts, canoes are overturned and the occupants drown—all this calls for explanation. The savage reasons that water abounds in spirits who do these beautiful, mysterious, and terrible things. And so the shaman uses its occult powers. He observes that water can cleanse clothing, weapons, and the human body. Why, then, cannot water spirits cleanse and purify invisible stains? Here is an

[43] W. G. Sumner, The Yakuts. Journ. Roy. Anthro. Inst., 31: 105, 1901 (abridged from the Russian of Sieroshevski).

[44] E. R. Smith, The Araucanians, 233; Max Bartels, *op. cit.*, 287.

anticipation of our own baptismal rites, and also of hydrotherapy—the cold bath, the host bath, the wet sheet pack, the Russian bath, the Turkish bath—"water cures" which are recognized as treatments for various ailments.

If the primitive doctor thinks the disease spirit is friendly, his method changes from exorcism to propitiation. Among all primitive peoples the most unfailing means of appeasing the angry gods and of securing their favor, is thought to be the offering of blood. The spirits, as has been suggested, are anthropomorphic beings, and since, therefore, they relished the taste of blood when in the flesh, they have not changed subsequently to their apotheosis. Thus, the rulers of the ancient Mexicans were the descendants of conquering cannibals. The idols, representing their gods, were fed with human hearts. When the priests represented to the chiefs that the idols were starving, war was waged and captives taken, "because the gods demanded something to eat."[45]

It is not always necessary that the priest kill a victim, however, in order to obtain sacrificial blood. He sometimes cuts the skin of the victim's head with a seal's tooth, catches the blood in rags, and lays the bloody rags beside a corpse as a substitute. In other instances he simply pierces the ears and shoulders of the victim, gathers the blood in a sponge, and squeezes it into a sacred vessel.[46]

The striking thing about sacrificial blood-letting is that the shaman in his zeal to propitiate the spirits by blood offerings, unconsciously and inadvertently initiated a therapeutic agency which has never been abandoned—that of venesection, or the cutting of veins in order to draw away the patient's blood. In the seventeenth and early eighteenth centuries, blood-letting was applied by doctors in every kind of sickness. During the latter half of the eighteenth century, however, there was a reaction against its excessive use, and the practice was to a great extent discontinued. But within the last quarter of a century there has been a revival in its favor, and it has been employed by progressive physicians in cases of advanced mitral disease, pneumonia, and other complaints. Here again the twentieth century practitioner owes something to the medicine-man, and has been benefited by the pioneering work of his precursor.

Additional evidence that the shaman's contribution to the science of medicine has been most real and positive is forthcoming from the assertion that

[45] Antonio de Herrera, General History of the Vast Continent and Islands of America, 3: 206–213 (translation by Stevens).

[46] Julius Lippert, Die Kulturgeschichte der Menscheit, 2: 328.

our materia medica owes tobacco, gum-copal, liquid amber, sarsaparilla, resin of tecamaca, jalap, and huaca to (the medicine men of) the Aztecs;

and, again, that

guiacum, ipecacuanha, and certain purgatives first became known through the Indian medicine men;[47]

and from the fact that a painstaking, personal comparison between the Cherokee pharmacopoeia and the United States Dispensatory reveals the fact that about twenty remedies examined were correctly used. I have, in another place, traced scores of useful drugs back to the customs and practices of medicine-men.[48]

The shaman, therefore, adverse criticism to the contrary notwithstanding, is not a social octopus. Despite the strong conviction of many writers concerning the perniciousness of his influence, he and the principles for which he stands have always formed the conservative element in his group Despite the selfish aims and ambitions of the medicine-man and his fellows, the growth of political institutions has been tremendously promoted by the activities of the priest class. Despite the parasitical imposition upon society of this "hanger-on," certain phases of history, education, literature, and natural science have had their origin with him. Despite the shaman's oppression of the masses, he has been instrumental in the enforcement upon men of a rigorous, uncompromising discipline, and for that reason alone he represents one of the most socially beneficent institutions ever evolved. Despite the multitudinous faults and even crimes that have been laid to the charge of this personage, to him and his class must be credited the initiating, fathering, fostering, and for centuries of preserving the noble art of healing.

Upon this fragile foundation the science of medicine has built its imposing structure. Beginning with the blind gropings of the shaman in his efforts to expel or appease malicious or angry spirits, medical science left, long ago, the lap of its mother superstition, learning anatomy from Egyptian embalming, increasing its knowledge from the Greek study of living bodies, adding, as time went on, public hygiene from the Jews and the beginning of operative surgery from the Hindus. It acquired skill in sick nursing during the Middle Ages, and developed anatomy as a science during the Renaissance; it began the study of pathology and the practice of instrumental diagnosis during the eighteenth century. Nineteenth century practitioners brought the crude beginning of surgery well-nigh to a

[47] Lucien Biart, Lez Aztèques, 285 (translation).

[48] John Lee Maddox, The Medicine Man, 217–282.

state of perfection and organized medicine into a science; while contemporary physicians have honored their profession by the introduction of antiseptic surgery, serums, and preventive medicine. A truly wonderful record! And the medical is one of those sciences which seems capable of boundless, measureless development; it is ever advancing, and showing the capacity for we know not what illimitable progress. "Thus far but no farther" is not written for it. Could any future be more alluring?

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PREHISTORIC POTTERY AND CULTURE RELATIONS IN THE MIDDLE GILA

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THE question of how far the prehistoric Mexican and Pueblo cultures have influenced each other has been rife for several years; in the Middle Gila drainage of Arizona is evidence that will throw considerable light upon that subject. Not until the last two or three years has this region been more than cursorily examined by archaeologists. This Middle Gila region is important not only because of its location but also because of the large prehistoric population indicated by innumerable sites marked with crumbled walls and covered with potsherds.

The term "Middle Gila" we have applied to a part of that district formerly known as the "Lower Gila." The Lower Gila culture has been supposed to extend from a vaguely defined eastern boundary of the Upper Gila to the mouth of the Gila, where that river joins the Colorado. But as very little is known at present about those ruins west of Gila bend, and as the Gila polychrome ware is found as far west as that point, it has seemed well to divide the Gila drainage into three main areas according to the extent of the characteristic pottery types. The Upper Gila may be said to extend from the headquarters of the Gila and San Francisco rivers in western New Mexico to Bylas, a small Arizona town near San Carlos on the Gila; the Middle Gila extends from Bylas to Gila bend, and the Lower Gila would then be that land between Gila bend and Yuma. The naming of the Middle Gila is of some importance in exactly defining the region in which occurred the events here outlined.

Middle Gila Culture South of the Gila River

The first makers of decorated pottery in the valleys and plains south of the Gila seem to have been migrants from farther south, probably from Mexico, for their red-on-buff ware is more closely related to the southern than to the northern pottery types. Most of these people settled in the valleys south of the river itself, but a few built their villages just north of it around San Carlos and Bylas, and others occupied the Salt River valley in the Phoenix region. They did not, however, go far enough east in the valley of the Salt to reach the Roosevelt district; there we find evidence of a people who had come down from the more eastern Upper Gila and from the more northern Little Colorado drainages. Thus we find in the Middle Gila two sub-districts which might be empirically designated as the North and the

South Middle Gila. The former includes the country between the Gila river and the Mogollon plateau between the points indicated as the east and west boundaries of the Middle Gila culture; here the Gila polychrome ware was finally developed. The second sub-district comprises the country from the river south to some at present undefined periphery near the international boundary; here the people manufactured red-on-buff pottery, the remains of their culture being finally radically changed by influence from the North Middle Gila shortly before it passed into decadence and oblivion. Chief among the changes resulting from contact with the north were the discarding of cremation for earth burial and the revolution of colors and designs used on the pottery. In determining the chronologies and relationships of these wares three methods were used:

1. Stratigraphy
2. Cross finds of pottery
3. Study and comparison of pigments used in decoration[1]

As only small trash mounds are to be found in many of the ruins of the Middle Gila and as no stratigraphy is apparent in many cases, the following chronology is chiefly based on cross finds of pottery, which have been fairly abundant. By noting that black-on-white and black-on-red wares are found together in one pueblo, that black-on-white, black-on-red, and one type of polychrome are found together at a neighboring ruin, and that another type of the same polychrome is found at still another neighboring site where there is no black-on-white, and almost no black-on-red, but a number of Jeddito yellow trade pieces which have been entirely lacking at the other pueblos, one finds a pottery series of which one end is evidently contemporary with the Jeddito yellow period. Knowing from Dr. Douglass' tree ring and pottery correlations[2] the date for Jeddito yellow, and from E. W. Haury's similar correlations in the Silver Creek drainage of the White mountains[3] the dates for the Little Colorado black-on-red and polychrome wares of which cross finds occur in the north Middle Gila, we are able to affix approximate dates for the pottery succession of the Middle Gila. These are indicated in the chart accompanying this paper. Stratigraphy of burials and of some trash mounds further clear the issue.[4]

[1] F. M. Hawley, 1929.

[2] A. E. Douglass, 1929.

[3] E. W. Haury, 1930.

[4] The following classification of pottery, submitted as a thesis in May, 1928, depends upon our recent work for its verification and dating. The red-on-buff series here listed agrees in many points with H.S. Gladwin's findings at Casa Grande published later the same year and with his more extended surveys still in progress.

1. Crude, unslipped red-on-buff.[5]—An example of rectangular pit houses with a predominance of red-on-buff pottery of an early type, together with some corrugated ware is found near Bylas and again near Casa Grande. (Pl. 8*e*.) The pottery paste is light gray-brown, rather coarse, and tempered with considerable mica and a little fairly fine sand. Vessels are smoothed but unslipped and unpolished, with walls about 3/8 inch thick. Very shallow bowls that resemble plates are found as well as deeper bowls with outflaring sides in inverted bell shape. Animal forms were sometimes used for the shape of vessels. Bowls were decorated only on the interior; the designs used were small repeated elements, H's, swastikas, meanders, crosses, interlocked scrolls, and very crude little animals or human figures. All are characterized by poor brush work. The area to be decorated was commonly divided into quarters, each of which was filled with a single repeated element. The surface was so porous on some pieces that the thin ochre paint sank into it, and, after firing, produced faded chocolate red designs on a buff background. Other pieces seem to have been rubbed while still damp until a thin clay film spread over the surface or to have been very thinly slipped.

2. Slipped, unpolished red-on-buff.[6]—As pottery technique developed, the clay was sifted finer and burned harder, although the texture was still poor (pl. 8*d*). The surfaces were slipped and well smoothed, although rarely polished and consequently lacking in luster. Cups, bowls with flaring sides, and ollas with vertical necks were the favorite shapes. The ollas were often modeled with the sharply angled low Gila shoulder, although some had globular bodies. Rims were flat. Casas Grandes polychrome, which developed similar although not exactly parallel designs, was also molded with with this shoulder. Differences in development of wares would be due to the separation of the two peoples even if both wares, as might be possible, came from the same prototype. Many of the red-on-buff ollas about ten inches high and nine inches in diameter served as cremation urns. Some small figures but a great many more larger geometrical units were used. Interlocked water symbols of curved or straight lines, scrolls, checkerboards, cross-hatching at right or acute angles, zigzags, series of parallel lines used to outline the large elements, and solid triangles from the upper corner of which projected a tangent with a short line pendent were combined into a running design in a wide band which covered the upper exterior of low-shouldered ollas. The same elements were used in the interiors of bowls and sometimes on the exteriors as well. On much of this

[5] Approximate parallel—"Colonial period red-on-buff"—Gladwin, 1929.

[6] "Sedentary period red-on-buff"—Gladwin, 1929.

South Middle Gila. *a*, *b*, *c*, finest polished red-on-buff, black burnished interior; *d*, slipped unpolished red-on-buff; *e*, unslipped red-on-buff.

ware are found large firing clouds, often covering half or more of the surface of the vessel. The excessive size of these clouds would seem to indicate that they were produced intentionally as a variation in decoration. Many of the bowls were decorated in red-brown on both the exterior and interior, after which most of the interior surface was crudely smudged. This produced vessels with red-on-buff exteriors and red-on-smudged-black or dark gray interiors. Occasionally only the one or the other surface was decorated instead of both. That the smudging had been done after the designs had been painted and burned onto the surface is evidenced by the fact that the red paint, which is permanent, must have been burned into the surface, and if the vessels had been smudged and then heated again to that red heat required for burning the paint onto the surface, the carbon of that smudged surface would have been burned out. One might expect that smudging after the designs had been applied would have obliterated the designs by impregnating them with carbon, but experiments have shown that the carbon will not penetrate the fine and comparatively hard surface of the paint nearly as well as it will penetrate the porous lusterless background. Where the pottery has been smudged for a short time so that the carbon blackens the entire surface of the vessel, it will be noticed that the painted figures are obliterated. Laboratory experiments have shown that this may be done with 15 minutes' smudging of a sherd buried in a crucible of smoldering sawdust which is kept hot from the outside. Ten minutes more of the same treatment will reverse the action and partly burn off the carbon, so that designs show clearly and backgrounds are of deep gray, such as are commonly seen in this ware. Outside conditions, which would be less under control than in the laboratory, would vary the results only in time required to obtain the different shades. The small amount of carbon that did penetrate and remain on the red paint so darkened it as to make one think that a slightly darker shade of paint had been used on that surface than on that which was unsmudged, but burning the carbon out with excessive heat will leave this red the same shade as the other. Since this is our earliest example of smudged ware in southern Arizona, we might surmise that the method of decoration was introduced through some potters noticing unintentional smudged spots due to poor firing. The people, not being displeased with these spots, tried to smudge larger areas of their vessels since they found smudging over designs not particularly satisfactory and in the meantime having developed the art of polishing the surfaces of their vessels, they began to decorate the background with black carbon paint, over which the red designs were drawn. At Martinez Hill ruin are found good examples of this method.

The house structure of this period was the rectangular pit house. Villages were surrounded with compound walls, as in the later period.

3. Finest polished red-on-buff.[7]—The next development in red-on-buff was the manufacture of a slipped but lusterless ware, fairly well decorated on the exterior, with a plain black polished and smudged interior (pl. 8*a*). Somewhat later this developed into a very fine slipped ware, neatly and artistically decorated on a polished exterior and with the interiors of the bowls highly burnished and smudged to produce a remarkable satin-like effect (pl. 8*b*). The paste was hard, the temper fine, and the slip ranged in shade from a cream to a light reddish brown, the later vessels averaging much darker than the earlier, and both being darker than the red-on-buff of preceding periods. Flagged triangles in series, interlocked scrolls, and groups of parallel enclosing lines were the most characteristic design elements. These were still arranged into a wide band, which covered the upper surface of ollas and bowls and left the lower surface plain. Now the elements were arranged to form varied individual units which were fitted pattern-like into the band. The early red-on-buff III ollas were large and low-shouldered, the later ollas were half the size, with rounded shoulders midway of the vessels, slightly longer necks and even less of a lip. Rims were roughly flat. Bowls had large bases and rounded vertical sides slightly constricted at the base of the short flaring lip. The early type was found at Gila Bank ruin, fifteen miles below Bylas on the Middle Gila; the latter in ruins in the Santa Cruz valley, and at Casa Grande village.

The polychrome of the late period from Casas Grandes, Chihuahua, is also characterized by the use of interlocked scrolls, volutes, and triangular rain clouds with the tangent and pendent lines. Parallel lines in groups from 1/2 to 1 1/4 inches in width outline all large design elements just as in the south Middle Gila red-on-buff. The red-on-buff ware extends to our international border, but, unfortunately, almost no data concerning the early period south of the line is at present obtainable. The decided similarity between the colors and designs used on the Casas Grandes polychrome and on the red-on-buff ware of the early southern Middle Gila period indicate a rather close inter-relationship. If the two wares were placed together without indication that they came from different sites and periods, the red-on-buff might very well be taken for the prototype of the Casas Grandes polychrome, the black and red on buff ware. No relation between the red-on-buff and any other Arizona ware is traceable. As might be expected, the clay used for the paste was the same as that later used

[7] "Classic period red-on-buff"—Gladwin, 1929.

Approximate dates suggested through cross finds of wares from the Little Colorado drainage	North Middle Gila	South Middle Gila	Upper Gil
	Abandoned		
	Late Gila polychrome	Late Gila polychrome Red-on-buff—III (declining)	?
1400 A.D.	Early Gila polychrome Little Col. black-and-white-on-red Tularosa black-on-white (declining) White-on-red—modified corrugations	Red-on-buff—III	Little Col. bla red Tularosa black-on Painted corruga
1300 A.D.	Little Col. black-on-red Tularosa black-on-white White-on-red—modified corrugations	Red-on-Buff—II	?
1200 A.D.	Tularosa black-on-white	Red-on-buff—I	
?			

[8] This chart is to be read from the bottom upward; that is, those wares listed at the bottom different types of characteristic wares graduated into each other, the division lines as drawn he as only approximate. Stratigraphy and cross finds were used as the basis of this chronology.

[9] After Hodge.

[10] After Spier.

...te dates ...ough cross ...s from the ...do drain-	North Middle Gila	Sou
	Abandoned	
	Late Gila polychrome	Late Red-c clin
...D.	Early Gila polychrome Little Col. black-and-white-on-red Tularosa black-on-white (declining) White-on-red—modified corrugations	Red-c
...D.	Little Col. black-on-red Tularosa black-on-white White-on-red—modified corrugations	Red-c
...D.	Tularosa black-on-white	Red-

... is to be read from the bottom upward; ... of characteristic wares graduated into eac ...imate. Stratigraphy and cross finds were us ...lge. ...r.

MPORARY WARES IN THE GILA AND LITTLE COLORADO CULTURES[8]

e Gila	South Middle Gila	Upper Gila	Little Colorado
Abandoned			F. Recent glaze, black or green[9]
			E. Modern polychrome (no glazes)[9]
		?	D. Black-or green-on-white. Non-glaze colors used[10]
chrome	Late Gila polychrome		
	Red-on-buff—III (declining)		C. Black, green, or purple on white[9]
ychrome ack-and- l			B. Black-or-green-glaze-on-red[9]
on-white —modi- tions	Red-on-buff—III	Little Col. black-on-red Tularosa black-on-white	A. Black-on-white-on-red[10] Black-on-white
		Painted corrugated	Fine corrugated
k-on-red on-white —modi- tions	Red-on-Buff—II	?	Black-on-red Black-on-white[10]
on-white	Red-on-buff—I		Black-on-white Corrugated[10]

ottom upward; that is, those wares listed at the bottom are the earliest. As the periods of aduated into each other, the division lines as drawn here must necessarily be considered oss finds were used as the basis of this chronology.

in the Middle Gila polychrome ware from the same district; it was the common clay of the country. The brush work of the Casas Grandes polychrome averages about on a par with that of the contemporaneous slipped and polished red-on-buff. If the black paint were eliminated from the Chihuahua polychrome, many of the pieces would be so similar to some of the best red-on-buff vessels from the Santa Cruz as to be possibly confused with them. Natural parallel development of totally unrelated wares could hardly be expected to produce such a remarkable similarity. Only the theory that both were developed from a common prototype or that one was quite closely related to the other through diffusion would seem to account for the similarity as well as for the difference between these wares. We have ample evidence of trade between Casas Grandes and the Middle Gila in the late period.

Some time after the last red-on-buff ware had been developed, a new type of pottery came into the southern Middle Gila country. This was the late Middle Gila polychrome which had been developed in the north Middle Gila and which now spread in all directions. Schmidt and Gladwin give high percentages of polychrome sherds in the upper strata of red-on-buff mounds. At the time of the adoption of the polychrome ware the north Middle Gila custom of full-length burial was adopted in some south Middle Gila villages. Before this time, with few exceptions, cremation appears to have been the customary method of disposal of the dead in the south Middle Gila and inhumation in the north Middle Gila. This indicates a great influence exerted by the north Middle Gila at this time, for burial customs are among the most conservative rites of a people. Some red-on-buff ware of the late type was made in the south Middle Gila even after the advent of the polychrome, but in some villages the polychrome supplanted the red-on-buff almost entirely. Sites located in the peripheral area between the two centers yield evidence of the interinfluence of both culture groups even before this period.

On this hypothesis, then, which finally might be proved by an investigation of early Casas Grandes ware, the early makers of red-on-buff ware in the south Middle Gila were Mexican Indians possibly related to the ancestors of the Casas Grandes people. They may have been pushed north into this country at the period of early red-on-buff pottery, or they may have developed this from a still earlier type they brought with them, although as yet we have no evidence of any earlier decorated type in this area. Their relation to those Santa Cruz people who made undecorated pottery and lived in what must have been jacal-walled dwellings, with their bases surrounded with crude walls of heaped stones, is unknown.

Middle Gila Cultures North of the Gila River

In the meantime, who were in the north section of the Middle Gila, and what were they doing?

1. Tularosa black-on-white.—First, into the Miami-Globe-Roosevelt district came a people who seem to have migrated from the Upper Gila country. In fact, the Upper Gila at that time extended from the headwaters of the Gila as far west as where Roosevelt lake now is. Their pottery was of the black-on-white Tularosa type (pl. 9*c*). The paste is fairly fine and gray-white in color; the temper is of quite fine sand. When overburned, this paste turns slightly pinkish-yellow; when underburned it is dark gray, owing to the carbonaceous content. The slip was thick and dead white. The surfaces are slightly uneven and bumpy, but usually slick and shiny from polishing. Both exteriors and interiors of bowls, which average small, and of cups, small bowls with horizontal handles, are slipped. They are decorated in a sharp clear black paint composed of carbon and iron. Brush work averages well.

The pitchers, one of the most common shapes, had globular bodies, cylindrical necks making sharp angles with the bodies, and handles built up of three parallel clay fillets or of one wide fillet, flat, and unevenly crisscrossed with black. Many handles are modeled into crude animal figures. The necks of these pitchers are often decorated with three groups of perpendicular wide black lines arranged in groups of threes, or with variations of the stepped rain cloud design. Over the bodies are repeated small key figures, large scrolls, rectilinear or curvilinear, which contrast hatching with solid color, groups of parallel lines, and fine herring-bone work which entirely covers the surface. Neck and body designs are separated by an undecorated narrow zone of white. Dippers, which are not common, are of the bowl and handle type and are decorated in the interior. Bird vessels, sometimes made as water jars with open necks and no heads, are one sign of their propensity for copying life forms.

Red corrugated or plain red-brown bowls are common. The interiors of both types are smudged black over a well polished surface to produce a burnished effect. The coiling is fine, ranging from 4 to as many as 12 coils to the inch, and the corrugations are even and close. Bowls are from 8 to 10 inches in diameter and average deep for their width. A few are slightly constricted at the rim. The bowls were sometimes decorated by alternating bands of coiling with bands of corrugations; some were ridged with corrugations only in a narrow band of plain coils. Many were left ridged for a background and were indented to form geometric designs, which were sometimes quite elaborate and painted with a thin white wash over the corrugations.

a

b

c

North Middle Gila. *a*, modified corrugated white-on-red; *b*, Little Colorado black-on-red; *c*, Tularosa black-on-white.

Variations of the key pattern were most common. Scattered through the Miami-Globe district and on the hills which now form the shores of Roosevelt lake are pueblos whose main painted ware is the Tularosa black-on-white, although usually a few sherds of the Little Colorado black-on-red are found also. These wares are typical of the Tularosa or Upper Gila people, who seem to have been the first to occupy the region. Black on White ruin near Miami is a good example of this period, also many of the ruins around Roosevelt lake.

2. Little Colorado black-on-red.—Spier has worked out a chronology in the Little Colorado, with the second period characterized by black-on-white and corrugated ware, followed by the decline of black-on-white ware and the introduction of red ware decorated with black paint. In the north Middle Gila we find the black-on-white period followed by a period of decline in black-on-white and a rise of the Little Colorado black-on-red ware. This condition is well illustrated at Hilltop House near Miami.

The black-on-white periods of the Little Colorado, of the Upper Gila, and of the Miami-Globe-Roosevelt area seem to have been contemporaneous and very probably deal with but one large group of people, whose culture center was in the Little Colorado drainage. The Little Colorado people spread southward during this period, becoming separated from the home stock; succeeding developments in the pottery of people of the peripheral areas differed from those worked out at the same time by their northern relatives. Jeddito yellow ware followed the Little Colorado black-on-red in the Jeddito valley in northern Arizona; Middle Gila polychrome was the successor of southern Arizona. The use of iron-and-carbon paint on both the black-on-white and on the black-on-red in the Little Colorado, in the Upper Gila, and in the Middle Gila would also indicate a relationship.

While the people south of the Gila were making their slipped unpolished red-on-buff, those north of the river began to make the Little Colorado black-on-red as well as the black-on-white. This was probably about the beginning of the Great Pueblo period as that period was recently described by E. B. Renaud in "Culture Evolution in the Southwest" in *Social Forces*, or Pueblo III of the Pecos chronology.

The black-on-red bowls are hemispherical; ollas are not so common as bowls (pl. 9*b*). The clay is light colored, fine, and hard; the temper is of fine sand. Careful firing drove all the carbonaceous matter from the interior of the 3/8 inch vessel walls. The red slip which covers the bowls inside and out is of iron oxide. Surfaces are very smooth and occasionally well polished. Surface cracks are uncommon. Interiors of bowls are decorated

with deep black paint containing both carbon and iron oxide. Designs are usually geometric, made up of four sections of combined elements leaving an undecorated square in the center of the bottom. Workmanship was uniformly excellent. Some vessels show the broad black bands outlined in white, and many of them are decorated on the exterior with a white band design usually composed of repeated scroll or key figures.

In some of the ruins of this area a late form of the black-on-red is found, a form which so differs from the Little Colorado black-and-white-on-red that it must be considered an intentional imitation. The clay of the walls is of the same color and coarseness as that of the later polychrome, the surface is smooth but lacking in lustre, and the red slip is thinner and of a darker and more brownish red than the orange-red slip of the true Little Colorado ware. White fret designs are sometimes found on the exterior. Incomplete firing has left the center of the walls dark so that the fine white sand temper shows. This type seems to belong to that transitional period between the making of the Little Colorado and the Upper Gila pottery types, which were brought into the district at what we now suppose to have been its first period of occupation, and the invention of the Gila polychrome ware. The period is well represented by Dr. Cummings' excavations at Gila Bank ruin near Coolidge dam.

The white-on-red ware with modified or partially smoothed corrugations is much cruder than the other pottery types found in association with it (pl. 9*a*). A similar type may have been the proto-type of that painted corrugated ware common at Bylas. Both types are found near Miami, but there the former predominates. The paste of this cruder ware is coarse and tempered with a great deal of mica; the shapes lack perfect symmetry. The walls are about 3/16 inch thick, and the vessels are smudged black in the interior but are not polished to a high luster. During the process of coiling the pieces, vertical or slightly slanting indentations from 1/4 to 1/2 inch long were made in the exterior; later these were partly obliterated by use of the polishing stone, and the surface was covered with a deep purplish red which might seem never to have been burned on, as some of it will come off every time the vessel is washed and it may be entirely removed by brushing it in water. Not all these vessels were decorated, but most of them show crude linear designs in white, which also easily washes off and is sometimes almost gone when the piece is found. The designs consist of concentric zigzags, the outer lines of the group usually being edged with dots or short lines intended to be perpendicular to the main line. Brushwork was poor. The ollas are small and have short necks which slope directly into the bodies of the vessels.

The red-brown undecorated ware varies little in the different periods. Most of it found here shows a surface markedly streaked with the parallel strokes from the rubbing stone. Interiors of the vessels are usually smudged. Rectangular bowls, squash-shaped ollas, and circular bowls with an hemispherical depression in the base, occur.

In Hilltop House on Bead mountain were found graves which ran under the walls of many of the outer rooms of the village. Evidently these burials were made at the time the pueblo occupied only the highest crest of the hill; as the village grew, new rooms were added to the sides of the structure; the graves over which walls were built had probably been long forgotten by this time. In the trench graves are found those wares I have already described as occurring in the first two periods, besides which types there is one entirely new ware, the early Gila polychrome. Its occurrence here would indicate that this pueblo was occupied in a later period than Black on White ruin, its neighbor, which shows only black-on-white and black-on-red wares; and in an earlier period than Bead Mountain House, its other neighbor, which had no black-on-white ware, and no early polychrome, but where a great abundance of the late Gila polychrome was made.

The proportions of types as found in the early polychrome period at Hilltop House is as follows:

White-on-red with modified corrugations	40%
Little Colorado black-on-red and polychrome	20%
Tularosa black-on-white	10%
Early Middle Gila polychrome	10%

This period, characterized by the first appearance of Middle Gila polychrome, marks the height of the pottery development of the Middle Gila pueblos north of the river. The growing crudeness of later pottery here seems to indicate decadence, finally culminating in the fall of the culture in the latter part of the late pueblo period, listed early Pueblo IV in Pecos chronology.

The white-on-red ware listed has already been described. The Little Colorado black-on-red of this period shows a few new characteristics. The clay used for paste was now that most common in the district, a rather coarse brown clay, the same as that later to be used for the Gila polychrome ware. The surfaces of the vessels were smooth, but they lacked the slick finish of the earlier black-on-red. The slip was thinner and of a darker, more brownish-red than the orange-red slips formerly employed. Little white was used. Temper of fine white sand speckles the brown paste and is especially noticeable where incomplete firing has left the clay dark, another

characteristic shared by this black-on-red ware with the polychrome. This late type must constitute a subdivision of the Little Colorado black-on-red and belongs to the transitional period between the time when this Middle Gila region was of Upper Gila or Little Colorado culture and that later period when the true north Middle Gila culture was established. Chief among the characteristics linking this type to the Middle Gila polychrome is the use of carbon paint instead of the carbon-and-iron paint that had been formerly used on the Little Colorado black-on-red.

3. Early Middle Gila polychrome.—After studying the black-on-red ware and the black-on-white ware that had been prevalent in the earlier periods and which was still being made, and then studying the early polychrome, one wonders whether some progressive potter did not notice the pleasing effect produced when some black-on-white bowl happened to be nested inside of a black-on-red bowl and so decide to imitate that effect in a single piece (pl. 10*b*). In some such way the idea for the polychrome ware must have been born, for it is quite evidently a combination of the other two wares. One bowl found is decidedly of the polychrome type on the interior and of the black-and-white-on-red type on the exterior. In the polychrome in general more of the black-on-red than of the black-on-white characteristics prevailed.

As in the Little Colorado black-on-red ware, the interior designs of the early Middle Gila polychrome were brought clear to the edges of the bowls. The background, as in the Tularosa ware, was white, but the slip was slightly more creamy than in the Tularosa and much less creamy than the slip of the late polychrome. The interior finish was smooth, like that of the black-on-red, and much slicker than the surface of the later polychrome, a difference more noticeable to the touch than to the eye. The numerous tiny surface cracks which check the interior of the late pieces are lacking. Black carbon paint was used; it was made from the extract of a plant, probably some species of the *Cleome* or of the Mustard. After this paint came into favor, it was used until the end of the Gila culture; the old iron paint never reappeared. Shapes, finish, and designs were at their point of highest perfection when it was discovered that a carbon paint without the addition of mineral matter would serve their purpose almost as well as the old paint on which they had to expend more energy in preparing. The new paint was not quite so permanent as the old; and since it gives the first indication of a lassitude that was later to grow and effect a period of decadence and finally the fall of these people, we can perhaps see the change in paint as a possibly ominous sign. A gradually growing carelessness in the selection of clay for the paste is also apparent.

North Middle Gila. *a*, Late Middle Gila polychrome; *b*, Early Middle Gila polychrome.

As the light clay used before does not occur in large deposits in this district, it was something of an undertaking to secure it in quantities sufficient for their decorated pottery. The common coarse, light brown clay had been used for the ware with modified corrugations and for the undecorated pieces before. Now the brown clay was used for the polychrome, although the clay of the early pieces is finer and lighter in color than the clay of the late type. This was the same clay the people of the southern section of the Middle Gila drainage had been using.

The exteriors of the vessels were streaked with the rubbing stone and were of a more orange-red than the late polychrome. No red was used on the decorated interiors of bowls or on the decorated upper body of ollas. Perfect symmetry and a fine finish are typical. Rims are flat or slightly rounded.

Designs are almost entirely rectilinear; curves are found only in interlocked water symbols. Fine and accurate brushwork is especially noticeable in the hachure lines, which are thin and almost as even in many cases as if drawn with a ruler. Edges of all the lines are smooth, unwavered. Light, rather delicate, refined, and artistic, these bowls present a contrast to the gaudy productions that followed and from which they may be distinguished by negative quite as much as by positive characteristics. There are few life lines, no cross-hatching except where series of parallel lines intersect at a corner, no bird wing designs, no stepped or saw-toothed edges on the broad lines, no large masses of black, no border designs. The central design is commonly arranged around a modified swastika, which leaves the center of the bowl undecorated. In some bowls a circle takes the place of the inner square, but the quadrate arrangement is still carried out. The designs are not so heavy or as clumsily sprawled over the surface as in late polychrome; instead we find a sensitive appreciation of the beautiful, although some pieces were evidently the productions of less artistic souls. These designs are almost always arranged in a dual-quadrate symmetry, that is, there are usually four large design elements of which the opposing two are alike. Three elements are occasionally used instead of four. The dot inside of a square, the groups of parallel lines, stepped rain clouds with only two or three steps to one side, and the lines edged on one side with pendent drops, are typical of early polychrome and were used to a much less extent in the later ware. The design composed of concentric stepped lines in zigzags is almost a duplicate of that which is common on the black-on-white ware. The distinguishing characteristics of the early polychrome are quickly recognized after a few pieces have been examined.

The early polychrome ware was rapidly becoming popular, spreading,

and beginning to entirely replace the black-on-white and the black-on-red wares, which soon went entirely out of style. As the ware spread, it became cruder in color and design. The next step was a marked expansion of the area of influence or of cultural dominance. Not only did the late polychrome spread south; we have it in the upper strata of other mounds near Phoenix, north to the Mogollon rim, south to Cananea, Mexico, and from Solomonsville to Gila Bend, and trade pieces are found scattered throughout the entire Southwest. It was the last decorated ware to be made in the Middle Gila drainage in prehistoric times.

4. Late Middle Gila polychrome.—The clay of the late polychrome was coarse and brown; in the center of the walls a dark carbon line almost invariably attests to insufficient firing (pl. 10*a*). Bowls were the most common vessels. Their rims curved somewhat inward and were slightly rounded at the edges. Ollas were made with plain necks of varying heights or with bulged necks. A few had double necks. A decorative band of black-on-white encircled each neck. Bird vessels, low, wide-mouthed ollas onto which the small molded head and flat tail of a bird were attached, are about the only example of effigy forms. The bases of these are red and the entire upper part is in black-on-white, with occasionally an introduction of the background red.

This period of direct dual-quadrate symmetry, when design elements were characteristically grouped in combinations of twos and fours, was passing, and obverse mirror symmetry came into vogue, although some pieces of dual-quadrate design were still made. The obverse mirror symmetry may be understood if one visualizes a circle divided into four quarters, *a* and *b* over *c* and *d*. In sections *a* and *d* the same design element is used, but the two are turned opposite to each other as if one were reflected in a mirror. The symmetry is called obverse because the design is repeated in opposite corners. The most common design elements are the "bat wing," the interlocked water symbol, the triangular rain cloud with dripping rain pendant, stepped rain clouds, cross hatching, and the life line. Crude conventionalized human and animal figures are found, but they are rare. Designs are heavy, broad, and careless, with many large figures in black. The wide black bands are edged on one side with coarse saw teeth, and the whole gives the effect of a hurried careless effort to cover the surface in the manner of an impressionist rather than in careful detail. Some of the later potters did skilful work and some of their predecessors were careless, but in general the designs were much better in conception and execution in the early period.

When red was to be used in the interior decoration, the whole vessel

was slipped inside and out with red for the background color. White areas were then added, then the black, and finally in some cases the red area was again painted in to brighten the color. A final recoating of the red is often seen on the exteriors of ollas also. Exterior band designs, usually enclosed between heavy black border lines were occasionally used on bowls in combination with all-over designs which covered the entire lower interior surface of the vessel, the interior rim being also decorated with a border design between heavy lines. Exterior decoration of bowls and the use of red in interior decoration seems to have been limited to the latter part of the late period, at least in all cases except for simple black or white figures, which are occasionally seen near the exterior rim of an early polychrome vessel, quite after the style of the Little Colorado polychromes.

The decoration of ollas was divided into two wide bands, one of which encircled the body and the other the neck. They were separated by a narrow band of red. The above-mentioned two zone decoration of the bowls is similar, but occasionally a series of narrow zones in stripes running around the ollas or bowls is found. The border designs of the two zone type were of a simple repeated geometric unit, often the stepped rain cloud. Sometimes only a heavy black life line with its break for the exit of life or spirit was used. Below this line or band of design in the bowls a space of about an inch was left between it and the main design, which covered the whole bottom of the bowl. The life line is rarely seen on early Middle Gila polychrome.

Summary

It would seem that Arizona might be divided into three large culture areas according to related pottery types:

(1) The black-on-white ware San Juan area, in which carbon paint was used

(2) The Little Colorado area, characterized by black-on-red ware with carbon-and-iron paint. This area would include the Jeddito district, where the yellow ware evolved from the black-on-red and retained the same type paint, and the north Middle Gila, where Gila polychrome evolved from the black-on-red and the Tularosa black-on-white, being decorated with the carbon paint which supplanted the carbon-and-iron paint formerly used in this district on black-on-red and black-on-white wares. The Upper Gila should also be included in this large general area because of the black-on-red commonly found with the black-on-white Tularosa type.

(3) The red-on-buff area of the southern Middle Gila (which incomplete surveys of the Lower Gila would indicate probably continued as a red-on-buff district toward the mouth of the Gila and southward).

Each of these large districts would, of course, have to be divided into subdistricts in an extensive study of pottery, but the division into three great areas may best show cultural and probably generic relationships.

In the Middle Gila, the southern region was peopled by aborigines related to those of northern Mexico. They first built pit houses and later true compounds, and made red-on-buff pottery which passes through three stages of development. During the period of the first stage, people from the Upper Gila and the Little Colorado pushed into the northern division of the Middle Gila area. At first Tularosa black-on-white was the characteristic pottery, but soon the Little Colorado black-on-red and the white-on-red with modified corrugations were also made. The black paint was a combination of carbon and iron. From the black-on-white and the black-on-red wares, the early Gila polychrome was developed, characterized by decoration similar to that used on the black-on-red, by a new carbon paint, and by a paste somewhat coarser than that formerly employed.

Late Gila polychrome, cruder in color, design, and workmanship, evolved from the earlier ware and spread south and west to those pueblos which had been making the red-on-buff ware in the southern Middle Gila. The polychrome supplanted the red-on-buff ware in some of the villages. Trade with Casas Grandes, Chihuahua, and with those pueblos making Jeddito yellow ware was carried on. Use of the life line might indicate some relationship with Zuñi, Sikyatki, Awatobi, and other pueblos of the Little Colorado drainage, where this relatively localized symbol was used. The Middle Gila culture was, however, about to pass into that oblivion from which archaeologists have but recently tried to bring it back to life. Cultures, like organisms, must grow, reach their maturity, decline, and finally die, if not previously swept out of existence by war. No evidence of forced abandonment of this region or of general extermination is found; the people, probably weakened by drought and famine, declined in number as in culture and finally either eventually died out or were absorbed from the last few pueblos by other tribes, possibly the people of the pueblos which exist today.

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BOOK REVIEWS

PREHISTORY

L'Art et la Religion des Hommes Fossiles. G. H. LUQUET. (Paris: Masson et Cie., 120 Bd. St. Germain, 1925. 131 pp., 119 ills.)

The book is divided into two parts—the first on Art, the second and much the shorter on Religion. After the orientation chapter, the author discusses in turn decorative art and figurative art and ends the first part with a chapter on the origins of art.

Decorative art reposes on the idea or the sentiment that artificial modifications of pre-existing objects renders them more beautiful, more agreeable to the eye. Figurative art is in essence realistic. There are two kinds of realism in Paleolithic art, not only different but also opposed. Visual realism is preponderant, but there is also intellectual realism. The co-existence of the two subsists down to the Magdalenian epoch, which is the artistic apogee of the Paleolithic period.

The author believes that figurative art of the Aurignacian epoch was purely and simply figurative, dictated by the pleasure the artist had in creating images of objects existing in nature; it had neither the magic destination nor the decorative rôle which is attached to Magdalenian art.

Figurative art properly so-called, must have been preceded by a preliminary phase in which figured works were produced not intentionally but by chance. It is logical to suppose that one of the sources of figurative art is the voluntary accentuation of a perceived resemblance. This artistic realization of *lusus naturae* might have commenced at even an earlier date than the Aurignacian epoch, probably during the Lower Paleolithic period.

In summing up Part Two, it is declared that, as far back as the Mousterian epoch, sepultures indicate that the dead were considered as conserving after death a sort of existence analogous to their earthly life, in which relations were kept up with the living; hence the funeral rite as a step toward making these relations as agreeable and harmless as possible.

Certain manifestations of Magdalenian art presuppose belief in sympathetic magic—for example, figures of animals wounded and masked human figures. It is probable that the efficacy of disguises in the chase may have led to belief in the magic virtue of the disguises or masks, which in turn became the attributes of the magician.

The author's familiarity with the subject is confirmed not only by the quality of the text but also by the numerous references to the literature now at the command of the serious student of prehistoric art and religion.

[An English translation by J. Townsend Russell, Jr., has just been published (1930) by Yale University Press: The Art and Religion of Fossil Man.]

GEORGE GRANT MACCURDY

Vorgeschichtliches Jahrbuch für die Gesellschaft für vorgeschichtliche Forschung. Herausgegeben von MAX EBERT. (Band II: Bibliographie des Jahres 1925 mit sechs Tafeln und einer Abbildung im Text. Berlin and Leipzig: Walter de Gruyter und Co., 1926.)

The Gesellschaft für vorgeschichtliche Forschung, founded in 1925, has for its object the advancement of Prehistory in all its fields. Its managing Committee consists of Max Ebert (Chairman), Königsberg; O. Almgren, Upsala; G. Karo, Halle; B. Meissner, Berlin; H. Obermaier, Madrid; H. Ranke, Heidelberg.

The 344 pages of the Prehistoric Year Book form a fair criterion of the ever increasing activity in the general field of prehistory. All but 78 pages are given over to bibliography, only the more important references being accompanied by a review consisting of one or at the most a few paragraphs. This "review" of the literature comes under four heads: A, Europe—General; B, Paleolithic and Mesolithic; C, Europe—Neolithic and later periods; D, Egypt; E, Palestine and Syria; F, the Near East.

The other features of the volume are: (1) an illustrated article on the excavation of prehistoric fortifications (22 pages), (2) news of a scientific and personal nature, and (3) the index consisting of 28 pages. This is an Old World Year Book as will be seen from the Table of Contents. That such a large and creditable volume is annually possible is a striking commentary on the rapidity with which our knowledge of Old World prehistory is expanding; it fully justifies the existence of our American School of Prehistoric Research, founded in 1921 in order that American students might the more readily obtain first-hand knowledge of Old World prehistoric records as well as to have a part in recovering and interpreting them.

GEORGE GRANT MACCURDY

Prehistoric Aigina. A History of the Island in the Bronze Age. JAMES PENROSE HARLAND. (Paris: Librairie Ancienne Honoré Champion, 5 Quai Malaquai, 1925. XII, 121 pp.)

The author explains that the Bronze Age lies before the period of written documents in this region, hence his choice of *Prehistoric Aigina* as a title. While a Fellow of the Archaeological Institute of America in the American School of Classical Studies at Athens, he took advantage of the opportunity to visit the island of Aigina, and the intimate knowledge thus gained is reflected in the work. Aigina lies in the center of the Saronic gulf approximately equidistant from the shores of Attika, Megaris, Korinthia, and Argolis. The island, which has an area of about eighty-five square kilometers (33 square miles), was conquered by the Athenians in 457 B.C.

The three sites which have been thoroughly investigated are:

1) The site of the Temple of Aphrodite in the northwest corner of the island near the modern town of Aigina, called by the author the "Northwest site."

2) The site of the Temple of Aphaia in the northeast corner.

3) The Oros, or Mt. Hellenion, in the southern corner forming the apex to the island triangle.

In addition, graves have been excavated in various parts of the island. The only fully published site is that of the Temple of Aphaia (Furtwängler et al., *Aigina: Das Heiligthum der Aphaia*, 1901–1905). Harland was fortunate, however, in being given access to the *Apotheke* of the museum in the town of Aigina, in which are stored the finds from the excavations on the Northwest site and the Oros. From the results based on a study of this material, and that found by the author as well as the existing literature, "a history or at least the framework for a history of the island of Aigina in the Bronze age," has been reconstructed.

The author makes use of the chronological system devised by Wace and Blegen, with but a single modification—he has made 1400 B.C. (not 1600 B.C.) the dividing point between the Middle and the Late Helladic periods. The three main divisions of his chronological table are:

1) Early Helladic period, ca. 2500 to 2000 B.C.
2) Middle Helladic period, ca. 2000 to 1400 B.C.
3) Late Helladic period, ca. 1400 to 1100 B.C.

A few entire pottery vessels and several dozen sherds that are characteristic of the Early Helladic period have been found on the Northwest site, attesting to its occupation by man in the first period of the Bronze Age. The pottery from this site is similar in style and technique to the Early Helladic wares found on the mainland at Korakou, Zygouries, Tiryns, and elsewhere.

The evidence for the occupation of the Northwest site during the Middle Helladic period is abundant, including pottery, graves, house-walls, and objects of obsidian. The Aiginetan pottery of this period is similar in technique, shapes, and styles to the contemporary wares of the Peloponnesos.

Very few sherds of the Late Helladic period have been found on the Northwest site. But the graves on the highland east and northeast of the site, now marked by the remains of the Temple of Aphrodite, have yielded many Late Helladic vases such as "squat bowls," two-handled beaker bowls, stirrup vases, one-handled jugs, and other vessels, as well as small terracotta figurines, or "Mykenaian idols"; the latter are probably images of a primitive female deity. Harland believes the "Gold Treasure" from Aigina now in the British Museum, consisting of gold pendants, necklaces, bracelets, rings, cups, beads of blue glass-paste, etc., came from a Late Helladic grave.

On Cape Perdikas at the southern end of the island, the author found scanty evidence of a settlement dating from the Early Helladic period. The Oros, as the conical peak of Mt. Zeus Hellanios is called, is also in the southern part (apex) of the island. Harland believes that the settlement on the Oros does not antedate the Late Helladic period. The decorative motives on the sherds found here are for the most part paralleled by those on the typical Late Helladic vases from Korakou, Mykenai, and elsewhere.

The work of Furtwängler and others already referred to, shows conclusively that the Temple of Aphaia site in the northeast corner of the island was not occupied before the Late Helladic period.

The author summarizes his archaeological evidence as follows:

1) Aigina was inhabited from the first settlement in the Early Helladic period throughout the rest of the Bronze Age and down to the present day.

2) The Bronze Age culture of the island was essentially the same as that of the Peloponnesos.

3) Cultural relations and trade intercourse existed between Aigina and the Kyklades in the Early Helladic period.

4) The hand-made Early Helladic pottery with decoration in lustrous paint suddenly ceases at about 2000 B.C., forming a break in the pottery sequence. In its stead appear the distinctive wheel-made Gray-Minyan ware and the Matt-painted ware. Another break in cultural sequence is noted about 1400 B.C. This second break marks the beginning, or the first wave, of the "Achaian Invasion" and the approximate date of the arrival in Aigina of the worshippers of Zeus Hellanios.

A study of the Aiginetan names and traditions leads the author to conclude that during the Bronze Age the island of Aigina was inhabited in turn by three different peoples: (1) Aigaians (Early Helladic), speaking a non-Indo-European dialect and worshipping "Aigaios"; (2) Minyans (Middle Helladic), speaking an Akadian dialect and worshipping Poseidon; (3) Achaians (Late Helladic), speaking a Proto-Doric dialect and worshipping Zeus Hellanios.

Whence came these peoples? What evidence there is points to the coming of the Aigaians from southwestern Asia Minor. The Minyans, on the other hand, came from the North. As for the Achaians, Harland believes they had previously resided for some time in Thessaly and the Spercheios valley.

Students of the subject who have not yet read this little volume should do so, as well as a somewhat smaller work by the same author entitled: *The Peloponnessos in the Bronze Age.*[1]

GEORGE GRANT MACCURDY

Some Irish Pleistocene Deposits and their Correlation. J. P. T. BURCHELL. (Man, 77–80, 1929.)

Burchell's correlation, which agrees in a remarkable manner with the results achieved in East Anglia, England, by Reid Moir, is as follows:

Deposits	*Culture stages*
7. General glacial retreat; formation of youngest recessional moraines.	Epi-paleolithic
6. Return of glacial conditions; readvance of the Scottish ice; formation of local upper boulder clay (brown, sandy, and loess) of Cos. Sligo, Mayo, Galway, Kilkenny, Carlow, and Queen's county, etc.	Magdalenian

[1] Harvard Studies in Classical Philology, 34: 1–62, 1923.

5. Deposition of gravels, sands, and loams of Cos. Sligo, Mayo, Galway, Kilkenny, Carlow, and Queen's county, etc.	Solutrean, Aurignacian Upper and Middle Mousterian.
4. Return of glacial conditions, attaining maximum glaciation; formation of Ivernian or local lower boulder clay (dark-grey and tough) of Cos. Sligo, Mayo, Galway, Kilkenny, Carlow, Cork, Waterford, and Queen's county, etc.	
3. Deposition of gravels, sands, and loans of Cos. Galway, Cork, Waterford, Wexford, Dublin, Donegal, and Queen's county, etc.	Lower Mousterian and Acheulian
2. Invasion of Scottish and Irish sea ice; formation of shelly basement boulder clay of Cos. Cork, Waterford, Wexford, Dublin, and Donegal, etc.; formation of lowest local boulder clay.	
1. Infra-glacial land surface as represented by the Nemestown loam.	Chellean

GEORGE GRANT MACCURDY

Kunst und Kultur der Vorzeit Europas. Das Palaeolithikum. HERBERT KÜHN, (Berlin and Leipzig: Walter de Gruyter and Co., 1929, 529 pp., 126 pls., and 8 maps.)

Dr. Kühn, a member of the Faculty of the University of Cologne, has already become well known as founder of *Ipek: Jahrbuch für praehistorische und ethnographische Kunst* (Leipzig, 1925). His special interest in the art of the cave period has led him to travel widely so as to study personally the original documents, in museums as well as in the caves themselves. He has a right to speak therefore as one having authority.

The present volume is the first of a series of four, to be followed in turn by one volume each by the same author on the Neolithic, the Bronze Age, and the Iron Age. While its title includes the term "Kultur," one will look in vain through its pages for a treatment of the industries bound up with the Paleolithic, except in so far as certain objects, such as dart-throwers and batons, may also be classed as tools. The author has treated the problem in a manner calculated not only to form a complete picture but also to tell the story of how the picture grew with the increase of our knowledge. Each station where cave art has been found is treated in the order of discovery and with a remarkable fullness of references to the literature. The subject is likewise treated from another viewpoint: the evolution of the art itself.

While the title of the book would seem to limit the author to Europe, he has generously included two chapters on the prehistoric art of northern Africa. And here the author is bold enough to refer the rock engravings and paintings of northern Africa to the Paleolithic period. In this connection, it will be recalled that

Frobenius and Obermaier, in *Hádschra Máktuba*, did not express a definite opinion as to the age of the art in question. The last chapter is devoted to the meaning of Paleolithic art.

The volume is profusely illustrated with well-chosen examples. Six of the 120 plates are in color. In addition there are 169 figures in the text. Dr. Kühn is to be congratulated on the completion of a treatise, at once easily comprehended, thoroughly scientific and all-embracing in scope, on a subject so all-absorbing as Paleolithic art.

GEORGE GRANT MACCURDY

La Bohême préhistorique. I. L'age de la pierre. ALBIN STOCKY. (Small quarto, x+219 pp., 122 pls., 77 figs., Prague, 1929.)

Bohemia is singularly poor in relics of the Paleolithic period. On the other hand it is rich in relics of the Neolithic period, so that practically the entire volume is devoted to the latter subject. No mention is made of the Mesolithic. Much space is rightfully given to Neolithic pottery.

The Neolithic period in Bohemia is divided into two epochs. The older epoch is characterized by the banded type of ceramic ornamentation in two forms: ribbon and punctate. Practically no cemeteries belonging to this epoch have as yet been located. The punctate type of band ornamentation is more recent than the ribbon type. The pottery forms remained practically unchanged. The bone and stone implements of the two epochs are practically the same. Substantially all the relics come from dwelling sites (hut pits) rather than from cemeteries, and these sites do not differ much from those in which pottery with ribbon ornament is found.

Painted pottery appears for the first time with the late Neolithic. The Moravian painted forms are found only sporadically in Bohemia. The principal types are "Lengyel" and "Jordansmühl." To this phase also belong the pottery with string ornament, the Michelsberg type, and caliciform vases. The tools, weapons, and ornaments include hammer-axes, wedges, knives, divers points and chipped flints. Necklaces and bracelets were formed of perforated teeth of the wolf, fox, dog, and red deer. Artificial imitations of teeth were also employed. The Michelsberg type of pottery was merely an episode in the prehistory of Bohemia. One can say that the Aunjetitz epoch in Bohemia is derived from the Michelsberg type of Alpine pile-village pottery. The caliciform vases as a group are distinct from the other Bohemian cultures; the caliciform group is not indigenous. There are three dominant forms in the caliciform group: goblets, plates, and pitchers—each with its variations. As for ornaments, tools, and weapons associated with caliciform pottery, there are flint arrowheads, plaques perforated at the corners, stone axes, and a few daggers of copper or of bronze. Inhumation of the flexed body was the rule. It is believed that the culture which developed caliciform pottery had its origin in the Iberian peninsula and penetrated easterly and northeasterly as far as Hungary, Moravia, and Finland.

The author concludes that the first Neolithic peoples to enter Bohemia came

from the southeast. The second ethnic element came from the north and northwest—represented by string-ornamented pottery and spherical amphorae. The ethnic influx from the southwest brought the caliciform pottery. The various elements fused and gave rise to the Aunjetitz culture.

The volume is fully illustrated and documented by means of maps, lists of sites, and bibliographic references.

GEORGE GRANT MACCURDY

NEAR EAST

Oriental Institute Communications. Edited by JAMES HENRY BREASTED. (University of Chicago Press. Communications Nos. 2–6, inclusive.)

The Oriental Institute of the University of Chicago, under its Director, Professor James Henry Breasted, is carrying on three series of publications of which the *Communications* are the first.[1] The first series is devoted to popular illustrated reports of Institute projects in the form of preliminary bulletins, for general readers. Of the first series, No. 2 is on "Explorations in Hittite Asia Minor," by H. H. von der Osten. The author begins with the historical and archaeological background as well as the geographical structure of Asia Minor, especially its central part. This is accompanied by three maps, one of which plots the route of the expedition. The preliminary report covers 104 pages and is profusely illustrated. The final report of this expedition has just appeared as volume 5 of the third series: *Publications of the Oriental Institute.*

Communications No. 3 embodies the "First Report of the Prehistoric Survey Expedition," by K. S. Sandford and W. J. Arkell. The expedition spent two seasons, 1926–27 and 1927–28, exploring for prehistoric cultures in situ in the terraces of the Nile, Upper Egypt. The five terraces of the Nile examined by Sandford and Arkell are at elevations above the river of 150, 100, 50, 25–30, and 10–15 feet respectively. The oldest (150 ft.) terrace is sterile. Chipped implements of the Chellean type were found in the 100-foot terrace, Acheulian in the 50-foot terrace, early Mousterian in the 25–30 foot terrace, and Mousterian in the 10–15 foot terrace.

The beaches of the Faiyum were found to contain implements of the Upper Paleolithic period. An industry with Capsian (Upper Paleolithic) affinities was found in situ in a silt deposit north of the First Cataract. This silt deposit is above the present-day level of the Nile, while farther north, it is below the present-day level.

So far as stratigraphic evidence is concerned, the transition to the Neolithic period is hidden beneath the modern alluvium in the Nile valley, the Hawara channel, and the eastern part of the Faiyum, but is available for study in the western part of that depression. Sandford and Arkell believe that the Faiyum lake and the Nile remained in contact, the lake draining itself into the Nile—just the reverse of the middle and late Paleolithic drainage.

[1] No. 1 of this series is now out of print.

No. 4 of the *Communications* is the preliminary report on "The Excavation of Armageddon," by Clarence S. Fisher. The foreword by Professor Breasted tells of the historic and military significance of the site and of the plans to complete its excavation, thanks to the generosity of John D. Rockefeller, Jr. The expedition was organized during the summer of 1925. Headquarters were built and the work of excavating was begun in the spring of 1926. It was during this first season (in April) that members of the International Congress of Archaeology visited the site on the way from the sessions in Beirut to those in Jerusalem. The present reviewer and Mrs. MacCurdy returned to Megiddo for a few days two weeks later as guests of Dr. Fisher. A year later Dr. Fisher's health had become so undermined from malaria that he was succeeded by P. L. O. Guy, of the Palestine Department of Antiquities. The important historical dates connected with Megiddo are 1479 B.C., when Thutmose III began a campaign into Palestine and Syria; about 970 B.C., when Solomon is said to have fortified and garrisoned the place; the invasion of Shishak in 932 B.C., and the reconstruction of some of the buildings during the reign of Ahab in 870 B.C.

One of the first fruits of Dr. Fisher's campaign was the finding of an important inscribed fragment of a great stela of Pharoah Shishak. This came from the dump left by the excavations previously carried on there by a German expedition in charge of Dr. G. Schumacher. The original stela had been broken up and its fragments used in constructing a building subsequent to 930 B.C.

Fisher's report deals with Topography and History, Organization and Methods, Clearing the Eastern Slope, Excavation of the Summit, and the Pottery Corpus.

The term "Armageddon" has come to have a generic meaning and is thus more widely known than the mound's specific name "Megiddo." Those who have not visited Megiddo can with difficulty comprehend the amount of work its excavation will require. The summit alone covers an area of 46,000 square meters.

Some of the Bronze Age tombs uncovered on the eastern slope date from 2500 B.C.; others belong to the Middle and Late Bronze Age (down to 1300 B.C.). Certain of the tombs included burials belonging to the Iron Age and even down to 400 A.D., when Roman influences were merging definitely into Byzantine.

The excavations on the summit reveal that during its last two periods, the hill was a mere fortified post along the highway and not a great walled-in city. The only tomb found on the summit that belongs to a period later than 350 B.C. was found in the ruins of a house in Stratum I. In Stratum II, but few objects have been found from which one can establish a date, but the stratum immediately below yielded objects dating from 800 to 600 B.C.

The report is fully illustrated by means of maps, panoramas, plans, sections, views of the excavations in detail, specimens, etc.

"Medinet Habu, 1924–28," is the title of *Communications* No. 5. The report consists of I: The Epigraphic Survey of the Great Temple of Medinet Habu, by Harold H. Nelson; and II: The Architectural Survey of the Great Temple and Palace of Medinet Habu.

Medinet Habu is the great mortuary temple, in the necropolis of Thebes, built by and for Rameses III (12th century B.C.). The building was intended to form the chief monument of the reign of this monarch, hence the walls were covered with scenes from that phase of his activities, which would insure him the highest approval in the sight of both gods and men. There are over 1600 linear feet of historical reliefs, both inside and outside the temple, telling the story of the Pharoah's wars. The inscriptions which accompany the reliefs are a veritable mine of philological riches. A point not always appreciated in dealing with these Medinet Habu reliefs is the extensive ancient use of plaster to cover up defects in the masonry. This plaster, especially in the exposed portions of the walls, has for the most part fallen, carrying with it the designs once carved into or painted upon it. In spite of this unfortunate circumstance, there remains of the records at Medinet Habu a mine of archaeological, artistic, historic, and religious information.

Little more than a quarter of the report is devoted to the architectural survey of the great temple and palace of Medinet Habu, by Uvo Hoelscher. The report throughout is accompanied by numerous and beautiful illustrations.

No. 6 and latest of the *Communications* is by H. H. von der Osten: "Explorations in Hittite Asia Minor, 1927–28." This report of 153 pages (the longest of the series) is provided with an index and glossary. It and *Communications* No. 2 are by the same author. The Hittite expedition was early divided into three separate projects: (1) exploration to gain a bird's-eye view of the general conditions, ancient monuments, and geographic structure of one of the large units into which Asia Minor is naturally divided; (2) the explorer, having seen the various ancient sites in such a unit, makes the preliminary selection, and afterwards with the excavator chooses a site for excavation; (3) then follows the surveyor, recording in a square 40×40 kilometers every ancient monument around the chosen site.

In 1927 excavations were started at the great Alishar mound and were continued for six months. A 40-kilometer square was laid out with the Alishar mound approximately at its center. During 1927 about a dozen shorter trips within the square to be surveyed were made. As to Alishar, the main result of excavations there was to establish the relative chronology of the pottery. During the season of 1928, the whole square around Alishar was finished and a region as large as that explored in 1926 and bordering it on the east was selected for exploration.

In brief, the Alishar mound provided a reliable relative chronology for pottery from early Turkish times back to the "Hittite" period. Two chronological dates have been established: the late classical period from the first to the sixth century A.D., and the Hittite period between 1200 and 1000 B.C. Two still earlier periods are also known. The survey has given an idea of the dense population of this region in ancient times. The investigations carried on thus far will help immensely toward the solution of the Hittite problem in an archaeological sense. The 160 illustrations give an added interest to the illuminating text.

GEORGE GRANT MACCURDY

PHYSICAL ANTHROPOLOGY

Rassenkunde Europas. Mit besonderer Berücksichtigung der Rassengeschichte der Hauptvölker indogermanischer Sprache. HANS F. K. GÜNTHER. 3. wesentlich vermehrte und verbesserte Auflage. (München: J. F. Lehmanns Verlag, 1929. 342 pp., 483 ills., 34 maps. Geh. M 10,—, Lwd. M. 12.)

The author introduces the usual caution against confusing race with language, and then defines race as a group of mankind having certain physical traits in common which are peculiar to the group, and also a spiritual life which distinguishes it from every other group of men. He distinguishes, by these criteria, five European races: the Nordic race, with high stature, long head, small face, prominent chin, small nose with high nasal bridge, light or golden hair, deep-seated light (blue or gray) eyes, reddish-white skin; the Western race, with small stature, long head, small face, less prominent chin, small nose with high nasal bridge, brown or dark hair, sunken brown eyes, brown skin; the Dinaric race, tall, short-headed, small face, very strong nose, brown or black hair, sunken brown eyes, brown skin; the Eastern race, short of stature and of head, broad-faced, with feebly developed chin, short nose with flat nasal bridge, brown or black hair, fairly prominent brown eyes, yellowish brown skin; the East Baltic race, short stature, short head, broad face, heavy massive lower jaw, feeble chin, short, moderately broad nose with low nasal bridge, light (ashy blond) hair, prominent light (gray or light blue) eyes, light skin with gray undertone. There follows a more detailed description of these respective races, illustrated by hundreds of photographs of the living and by sketches of skulls; but, except for a few maps no statistical evidence of their frequency is offered.

The author then comes to grips with the souls of these races. He embraces the Nordic amorously, and it includes all the worth-while men from ancient Greece and Rome to the present, in the New World as well as the Old. Figure 475 exhibits "the ocean flier Charles Lindbergh, father Swedish, of Nordic stock"; other photographs show us John W. Davis, two university professors (one from Yale and one from Stanford) and the former president of the last mentioned institution. One can see by looking at pages 312–313 that Stonewall Jackson, Grant, Monroe, Jefferson—to mention but a few—were sturdy Nordics.

The final chapter introduces us to "Nordic thought," and to its exponents (further illustrated by photographs), Houston S. Chamberlain, Count Gobineau, Lafrange, Ammon, Madison Grant, Lothrop Stoddard, and finally (fig. 482) to a group of upstanding Viennese youths, all of Nordic stock.

WILSON D. WALLIS

Rassenkunde des jüdischen Volkes. HANS. F. K. GÜNTHER. (München: J. F. Lehmanns Verlag, 1929. 305 ills., 6 maps. Geb. Mk. 11.—, geb. Mk. 13.)

This is a comprehensive account of the Jews in historical, cultural, and geographical perspective, with a minimum of statistical information. The pre-Jewish

inhabitants of Palestine were Nordic, and inter-marriage with them is responsible for the Nordic Jewish strains. The concluding chapter gives the distribution of Jews in the Old World and the percentage they form of the respective populations.

WILSON D. WALLIS

Der nordische Mensch; die Merkmale der nordischen Rasse mit besonderer Berücksichtigung der rassischen Verhältnisse Norwegens. HALFDAN BRYN. (München: J. F. Lehmanns Verlag, 166 pp., 10 charts, 126 ills. 10 M; cloth 11 M.)

In striking contrast to most books by non-Scandinavians on the Nordic race, this work—avowedly dealing especially with Norwegian conditions—may be heartily recommended for its wealth of factual material and the absence of the propagandist spirit. There is also a sane appreciation of the significance of individual variability. Says Dr. Bryn:

> Bei einzelnen Menschen in den rassereinsten Bezirken kann dieser (Längen-Breiten-) Index zwischen 60–90 schwanken, ohne dass man deshalb sagen kann, dass die mit niedrigem Index rassereiner seien als die mit hohem. Niemand wird wohl die Rassereinheit leugnen, weil ein Mensch einen Index hat, der 10 Einheiten niedriger als der Mittelindex liegt. Warum sollte er denn nicht auch bei ebenso aussergewöhnlichen Kreuzungsverhältnissen 10 Einheiten höher liegen können als der Mittelindex? Wenn man aber eine Zeitlang in solchen rassereinen Bezirken arbeitet, dann wird man auch auf derartige Menschen stossen (p. 77).

The author distinguishes two strains of Nordics. One has yellowish-brown hair and dark blue or bluish-gray eyes; the other, ash-blond hair and light blue eyes. Dr. Bryn believes in a sharp differentiation of the two, suggesting immigration at different periods, but insists that the distinction corresponds merely to a subdivision of the Nordics (pp. 102–113). He goes so far as to postulate psychic differences between the two strains, but admits from the start that there is no objective determination of them and ends with the statement that mentally, too, they are mere varieties (*Spielformen*) of a single stock (p. 122).

In opposition to Dr. Fritz Paudler, Dr. Bryn deprecates the recognition of a blond brachycephalic race in Scandinavia. There is surely a strain (*Schlag*) of this description, but not a race. The preponderant body of tall dolichocephals impressed their blondness in mixture with less numerous dark brachycephals of Western Norway and from Finland (pp. 130–141).

The photograph of the "Norwegian explorer" on p. 84 will be identified by American readers as that of the late Dr. Lumholtz.

ROBERT H. LOWIE

OCEANIA

Primitive Economics of the New Zealand Maori. RAYMOND FIRTH. (New York: Dutton, 1929. Pp. XXVI, 505. $6.00.)

If anthropology is making progress, it is not alone by solving old problems, but also by opening up many new branches of study. Some of these are new, not in an

absolute sense, but in the sense that they have only recently received careful, empirical, and realistic treatment. The study of primitive economics is one of these new fields of endeavor.

Until recently most students believed that primitive men had no economic life worth studying. Economists were not interested in them: for were not these folk savages? They possessed only a small amount of material goods, had little private property, and often no money, tolerated no great amount of free enterprise, and did not produce for a market. Not much material for scholars whose attention was centered on the phenomena of exchange and price. When primitive people were mentioned by economists, it was usually for the sake of examples from their conjectural history.

Anthropologists, as well as economists, for a long time believed that there was little to primitive economics. The lack of good field reports, detailing the economic life of pre-literate peoples, lent support to the view, while this tradition buttressed the neglect of field workers. About most tribes, therefore, we possess, at best, fairly accurate accounts of their material culture—that is, of things that could be brought home to museums. While we may know that a certain people lived in skin tents and used polished stone axes, we remain totally ignorant of its economic organization.

What little attention primitive economics received came because the simpler (?) forms were considered illustrative of the stages through which our own industrial system had evolved. With this antiquarian bias, anthropologists studied native tribes in pursuit of origins about which we can know little or nothing. Such researches and such theorizing were destined to be sterile in consequences for economics and all the social sciences.

But not all anthropologists have followed traditional methods, and with a larger perspective has come a different and a greater interest in primitive economics. We owe most perhaps to Professor Bronislaw Malinowski, of the University of London. His *Argonauts of the Western Pacific* (1922) analyzed with great acumen and sympathy the economic organization of the Trobriand Islands. But he did more than this; he established the study of ethnological economics.

Primitive Economics of the New Zealand Maori is by Raymond Firth, a New Zealander, one of Malinowski's students; in fact, it is a Ph. D. thesis presented to the University of London. It attempts for the Maori even more than Malinowski did for the Trobrianders.

Dr. Firth significantly declares that he wishes to bridge the gap between anthropology and economics. An introductory chapter deals with the study of primitive economics, and here Dr. Firth surveys the whole field, doing well a useful work. A complete bibliography will be a help to persons interested in further study of this topic.

After a complete account of the physical and social environment of the Maori, Dr. Firth takes up the analysis of production, distribution, ownership, and exchange among this primitive people. In the eleven chapters dealing with these topics he has a large amount of material and a large number of points of theory,

which will interest anthropologists and economists alike. Indeed, he can be criticized for permitting himself too many digressions, which, interesting and profitable though they may be, detract from the readability of his book. There is, furthermore, too much repetition. But the value of the book is not really decreased by these minor faults.

R. H. Tawney, the economist, has written a commendatory preface to Dr. Firth's book. He points out that the *Primitive Economics of the New Zealand Maori* has something to teach us, because

> civilized peoples are disposed, perhaps, to underestimate the part played by economic rationalism in primitive society, and to exaggerate that which it plays in their own. Studies such as that contained in the following pages, by correcting the first error, help indirectly to remove the second . . . . The whole tendency of his book is to emphasize . . . how immensely more complex than is often supposed are the forces that produce the activities commonly described as economic.

Mr. Tawney ends his preface by saying:

> One who has been charmed and enlightened by Dr. Firth's book may be allowed to confess that the sentiment uppermost in his mind, as he lays it down, is the desire that an equally gifted Maori anthropologist should write an equally faithful account of the people of Great Britain.

Dr. Firth is to be congratulated on his excellent book, and Dr. Malinowski on his worthy disciple. Dr. Firth has made a valuable contribution to the advancement of the study of primitive economics.

MAURICE G. SMITH

AMERICA

Tizoc, Great Lord of the Aztecs, 1481–1486. MARSHALL H. SAVILLE. (Contributions from the Museum of the American Indian, Heye Foundation, vol. 7, no. 4, 1929.)

The technical merits of this little monograph must be judged by Mexicanists; but every anthropologist will find it an illuminating and stimulating cross-section picture of Aztec life, built up from authentic documents and data. The work is the result of the acquisition of a beautiful gold statuette of Tizoc, with his name-sign and date on the back, and thus deals with one of the few identifiable pre-Columbian personalities. It is to be hoped that Saville will give us more productions as interesting as this one.

A. L. KROEBER

Darien in the Past. S. LINNÉ. (Goteberg, 1929.)

This volume is an application to archaeology of the methods made familiar by Professor Erland Nordenskiöld's *Comparative Ethnographic Studies.* As an example of good description and far-reaching comparisons through maps and tables it is ad-

mirable. The paper presents the archaeological results of the Swedish expedition to Panama and Colombia in 1927 under Professor Nordenskiöld's direction. The ethnographical results are to appear in further volumes of the *Comparative Ethnographic Studies*. Most of the archaeological work was done along the coasts of Panama, largely in the southern part, the Pearl islands off the Pacific coast, and on part of the Pacific coast of Colombia.

Most important of the conclusions reached is perhaps Professor Linné's assertion that,

> We can assume with some certainty that the art of making pottery was independently invented in America (p. 270).

While the discussion of the evidence on which he bases this assertion is rather brief, this opinion from one who is so well acquainted with the problem of pottery bears considerable weight and should aid in stemming the tide of verbal trans-Pacific canoes laden with culture and elephants. Professor Linné, indeed, does not wholly deny the possibility of outside influence but he limits it to possible Asiatic affiliations of the Mandan-Hidatsa type of pottery through the same channels by which the Eskimo may have received their pottery.

Some evidence as to migration paths in Panama is adduced. While Professor Linné seems usually to imply large migrations of people, cultural transmissions must have followed the same routes. The Atlantic coast of Panama presents a much less desirable environment than does the Pacific coast. Here the expedition found no evidences of a large population or advanced cultures, particularly in the north. It is on the Pacific coast that most of the population lived and along which most cultural movements appear to have taken place. Most Central American elements seem to have come down the Pacific coast, crossed the isthmus about the canal and entered Colombia along either the Rio Atrato or the Magdalena. On the other hand South American elements seem to have worked northward along the Pacific coast to the isthmus, where they also crossed to the Atlantic side, where they must have made slow progress although the author does not indicate the effect of the inhospitable environment. He suggests that the close similarities between the cultures of Central America and the coast of Ecuador may be due to a large scale migration or migrations, which passed rapidly through Panama, as no trace was found by the expedition of any intermediary link of importance. He adds that much detailed excavation will be necessary before the problem of connections via the isthmus will be solved.

Secondary urn burial Professor Linné concludes is a South American trait while earthenware grinding pans, pattern stamps, cremation, incense burning, and masks for mummies are Central American. The placing of the origin of pattern stamps in Central America is a bit surprising, at least to the reviewer, but not improbable on the basis of the evidence presented. Roller stamps, incidentally, are not as old as plane stamps. Of late Central American influences the Pacific coast of Colombia seems entirely free except for earthenware grinding pans which the author considers a recent development. The culture of the coast seems entirely derived from the highlands with this exception.

Inasmuch as one of the objectives of the expedition, stated by Professor Nordenskiöld during his visit to Berkeley in 1926, was the discovery if possible of evidence bearing on trans-Pacific connections, the silence of Professor Linné on this point is worth noting.

The arrangement of material, proof-reading, and translation are not above reproach. Many of the apparent errors in translation may be due to the careless proof-reading, but there are occasional quaint constructions and such mistakes as "cannal" and "artefacs" some of which are used consistently throughout the paper. The meaning, however, is in no case in doubt and one would prefer this to incoherence and incorrectness of detail.

More serious criticism may be made of the arrangement of material. The distribution maps and often interesting discussions of their significance are inserted in the midst of detailed descriptions of excavations. The maps appear to be inserted at the first place the object discussed is found in the course of the descriptions of the diggings. This method does not appear particularly out of place in Professor Nordenskiöld's ethnographic work, where the viewpoint is from a single culture, but where several cultures are described with each site in detail the arrangement is less satisfying. Nor is there any apparent reason, other than to trap the hasty reviewer, why the most important summary with the most interesting conclusions should be sandwiched between the appendices and the ample bibliography.

A more helpful arrangement would be to segregate the purely descriptive matter and bring the distribution maps and discussions together, much as has been done in the first appendix, where funerary customs are discussed as a group along with the relevant distribution maps. Even here a description of one burial ground is brought in,—why, it is difficult to see, as others were described elsewhere.

These criticisms are small stones to throw at a work of such merit. It may be said with some assurance that were all reports of excavations as thorough and with as much attention paid to comparative data, the number of unsolved problems in American archaeology would be considerably reduced.

RALPH L. BEALS

Dress and Ornaments in Ancient Peru: Archaeological and Historic Studies. GÖSTA MONTELL. (Göteborg, 1929; Oxford University Press, vi, 265 pp., 99 figs.)

This is a scholarly work which owes its method, and apparently the stimulation that led to its production, to Erland Nordenskiöld. It makes exhaustive use of ancient textiles, vase paintings, modeled representations, Huaman Poma de Ayala's drawings, documentary sources. Each type of garment and ornament is considered for each area. The allotment of space, which also gives an idea of the scope of the work, is: Pre-Incan Age: Primitive, 5 pages; Recuay, 5; Tiahuanaco 9; Early Chimu (Chicama, Chimbote, etc.) 89; Late Chimu, 20; central coast, 20; Ica-Nazca, 12; Paracas and Ica 8; Incan Age: 64; Post-Columbian Age: 8; Bibliography: 20; Appendix (by F. Henschen, on tattooing): 1, with figs. *a-c.* Technology is only passingly considered (p. 180). Chronology also is touched on incidentally. The author

might find it as difficult to prove some of his opinions, such as that the Late Chimu pottery style originated about Lambayeque (p. 114), as he is on occasion skeptical of the historical views of other. However, there is still so much opinion and so little precise fact in the culture history of ancient Peru, that the one desideratum is to remain both open-minded and critical; and these qualities Montell possesses in unusual degree. He has shown several things: that real tattooing was practised, for instance, and that the poncho in the strict sense, i.e., with unsewn sides, was not old Peruvian but probably Chilean and post-Columbian in origin, so far as South America is concerned. Very interesting are the assemblages of face paintings (figs. 34–38). The nature of the material scarcely permits clear-cut general findings; but some sort of a summary review of the occurrence of types—by means of maps, tables, or paragraphs—would have been a convenience. All in all, this is a valuable monograph.

A. L. KROEBER

La civilisation matérielle des tribus tupi-guarani. A. MÉTRAUX. (Paris: Geuthner, 1928; xiv, 331 pp., 10 pls., 30 figs., 11 maps.)

Another work written in Göteborg on the initiative of Nordenskiöld. Of the maps, four show tribal positions at various periods; the remainder, trait distributions by the Nordenskiöld technique. The range of the work is as extensive as that of the stock or the 18 page bibliography. Primarily it is objects that are treated, rather than their use. Weapons receive 18 pages, utensils for food preparation 14, agriculture only 5. The Conclusion lists the distribution of culture elements among 17 tribes on which there are sufficient data. Of the traits, 57 are northern and eastern; 31, almost wholly confined to 5 tribes, Andean or western; 9 only, northwestern; 12, southern or sporadic; 37 have too wide or badly known a distribution to make their origin ascertainable. Of 43 common Tupi-Guarani traits, 24 are northern and eastern in occurrence, the remainder continental and without distributional significance. The center of dispersion of the stock is placed between the Amazon, Madeira, Paraguay, and Tocantins, probably on the upper Tapajoz. The reviewer feels some doubt whether the trait distribution technique, which deals with atomized elements of *culture*, can be legitimately applied to a determination of the origins or movements of ethnic *groups*. The case is the weaker here in that the author is sure of only three traits as due to Tupi-Guarani invention: finger impression pottery decoration, mantle, feather bonnet. He has the Tupi, Arawak, Carib move successively southward as waves in a peopling movement which was subsequent to that of the Gês and Chaco tribes.

If the chief criticism lodgeable against Montell is too little conclusion, it is the opposite here; perhaps a case of Scandinavian versus Latin temperament, at bottom. The body of the book, its materials and analysis, however, seem thorough, and it is a welcome and useful contribution.

A. L. KROEBER

Havasupai Ethnography. By Leslie Spier. (American Museum of Natural History, Anthropological Papers, vol. 29, pp. 81–392, text figures, 1–60, 1928.)

The Havasupai are a small Yuman group, who have never numbered more than 250–300 persons, and who occupy the narrow ravine of Cataract canyon and the surrounding plateaus on the south side of the Grand canyon. Their territory merges on the west with that of the Walapai, with whom they have the closest social and cultural relations. Spier regards the Havasupai as a distinct people, but points out that their speech is only a dialectic variation of Walapai, and it now appears in the light of recent work among the Walapai[1] that the two groups form a single cultural unit within which the Havasupai vary only in consequence of their enthusiasm for agriculture and their trading relations with the Hopi and Navaho. But the Walapai themselves cultivated where possible, as along the Great Sandy and in Diamond Creek, a smaller version of the canyon occupied by the Havasupai. They also traded directly on occasion with the Pueblos although, in general, Mohave influences were among them the counterpart of the Hopi contacts of the Havasupai.

These northwestern Yumans are, however, remarkably distinct from the Colorado River tribes whose characteristics are southern Californian and, perhaps still more strongly, Sonoran. The aggressive warfare and mourning ceremonies of the River tribes are lacking among the Havasupai.

The Havasupai are indeed a Basin-like people whose culture has been leavened by exceptional opportunities and contacts. During the winter they pursue a hunting and gathering life on the plateau, but in spring they move down into the canyon bottom, plant and irrigate every available plot of ground and enjoy a period of plenty, during which they are able to concentrate in a compact village unit. After the harvest a considerable part of the crop is stored in cliff granaries and a limited quantity is carried painfully up the canyon trail in October when the exodus to the plateau comes round once more.

The unity with the Basin area is apparent in both social and material culture. There is no trace of sibs and the family is the fundamental group. Post-marital residence is temporarily matrilocal but later reverts to patrilocal, whereby a concentration of the paternal lineage tends to appear. Chiefs are counselors rather than rulers and express their views at meetings through other speakers. There is, however, a tendency toward the Californian hereditary principle in chieftainship.

On the material side, apart from such widely distributed western traits as the two-piece skirt and rabbitskin blanket, the burden baskets, seed beaters, parching trays, and other domestic basketry are very prominent and of Basin-Central Californian types. The pottery is a crude coiled ware characteristic of western rancheria and some Basin tribes including the Paiute. Houses, although the square, gambrel-roofed Mohave structure of recent times has also been introduced, appear to be related to the conical earth and brush shelter as found, for example, among the southern Paiute across the Colorado, the people they most closely resemble in the wandering life of winter. Family groups then scatter to various localities where seeds and

[1] Laboratory of Anthropology, Ethnological Field Party, 1929.

fallen nuts are abundant. The men hunt in small parties in the Coconino basin or go off on trading expeditions among the Navaho and Hopi, or westward to the Mohave on the Lower Colorado. Mescal, collected on the canyon benches after the descent in spring, relieves the pressure on the stored corn and squashes while awaiting the late summer harvest.

With the return to the watered gorge bottom the life of the Havasupai is transformed. Forsaking the scattered migratory existence of the past season they apply themselves with Pueblo-like devotion to agricultural pursuits. Fields are cleared and fenced, dams across the stream are repaired, the irrigation ditches cleared or cut anew. Planting begins in April and continues until mid-June. The family groups cultivate their own fields, men and women sharing the labor.

The Havasupai in consequence of this occupational dichotomy manifest both in behavior, outlook, and material culture, the patterns of both a gathering and agricultural life. Professor Spier was able to visit them only during the agricultural phase, on which his data are in consequence more abundant and tend perhaps to overshadow the activities of the plateau life. The agriculture, although grafted onto a gathering life and developed in response to an unusual opportunity, is not to be regarded as wholly the result of recent Pueblo influence. The numerous varieties of Hopi corn were not introduced until the eighteen 'sixties, and the small-eared "Mohave corn," which was also grown on the Lower Colorado, is still used. The irrigation of the Havasupai is technically distinct from the dry-farming of the Hopi, and was also practiced where possible by the Walapai. On the other hand, sunflowers are grown for their seeds, a characteristic Pueblo delicacy not found on the Lower Colorado.

The period in which all are together in the village is the socially active period of the year. Games and songs, dancing and festivals are all concentrated in this period. Here again the Basin-like character of the culture is fundamental. Political, ceremonial, and religious organization is of the slightest. The Round dance and Bear dance are secular activities, as among the Basin tribes. There is no puberty rite for boys and the "roasting" for girls is somewhat perfunctory. The small dome-shaped sweathouse is of the type used in the Plains, the Basin, and central California. The magician-doctor is powerful but acquires his power individually in dreams and without a vision quest. He alone has a guardian spirit and resembles his Basin and Californian brethren. Actual inspiration is said to occur; the familiar spirit inhabits the "shaman's" chest, leaves it on journeys of discovery and returning

> re-enters his mouth, makes noises and sings. The shaman shuts his eyes and apparently sings, but in reality it is the spirit telling what it saw.

But the Havasupai were participators and to a considerable extent middlemen in the trade which passed from the Hopi and Navaho westward through Havasupai and northern Walapai territory to the Mohave. Woven blankets and sashes, pottery, beads, horses and buffalo skins were obtained in return for buckskin among the Hopi and agricultural products among the Navaho. Large quantities of deer, antelope, and mountain-sheep skins were bartered from the Walapai and tanned

by the Havasupai for this trade. Oraibi was the Hopi village most frequented by the Havasupai, but the old people at First Mesa remember seeing small Havasupai parties visit Walpi, and several had themselves journeyed to Cataract canyon, while Garces, in the eighteenth century met Hopi returning from the still more remote Walapai country. To the Mohave were carried buckskin and Hopi and Navaho textiles, which were bartered for white seashells—themselves traded up the Colorado from the Gulf.

These contacts with the Hopi pueblos, which were renewed almost every season and had been effected on foot long before the introduction of the horse, have not failed to affect Havasupai culture. At the annual dance which occurs after the harvest has been gathered and to which the Hopi, Navaho, and Walapai guests are normally to be expected, the clown who whips reluctant dancers is masked. Although the dance itself is the Round dance common to such Basin tribes as the Moapa, Shivwits, Kaibab Paiute, etc., men would attach fox or coyote skins to the back of their belts in Pueblo style. Until about twenty years ago a masked dance was given

> for good fortune, rain and to make crops grow. Six, ten or more men prepare within a house . . . they proceed to the dance ground following the leader in single file. Each second man steps to the left of his predecessor in line, forming a file of twos. The leader and his partner face about and dance twice between the files and back, then to the bottom of the files where they take up positions (much like a Virginia reel). The next couple now at the head of the files repeats this performance taking stations below the first couple, and so on as long as desired.

The masks are sack-like with transverse crests, tubular mouths, and painted designs. The dancers carry green branches in their hand. The performance and its vague ceremonial purpose has the air of an ill-learnt or half-remembered Pueblo rite. A rattle replaces the rasped stick in the Bear dance among the Havasupai and the manner of its use again indicates the incorporation of Pueblo technique.

The frequent addressing of prayers in planting, in stringing a bow, to the sun in hunting, for prosperity and above all to the springs where prayer sticks are planted also manifest considerable Pueblo influence, although elaborate practices are here reduced to an attenuated form.

Dr. Spier tends to minimize the importance of these Puebloan characteristics, fearing perhaps that from them some elaborate diffusion will be assumed. He emphasizes on the contrary the great fall in cultural level from the Hopi to the Havasupai and even favors indirect contacts through the Navaho rather than immediate Pueblo influence. It is, however, probable, as he shows, that the Havasupai did not encounter the Navaho until after the middle of the last century, while it is certain that they frequently visited the Hopi and knew enough of their practices, to take one instance, to say that the Hopi planted prayer sticks in the fields because, unlike themselves, they had no creek to irrigate with and had to pray for rain all the time (in itself a characteristic Hopi explanation). Indeed the extent of Pueblo influence, slight in content and restricted largely to a few obvious externals, is exactly of the character which one would expect, given the cultural conditions of the Havasupai and the type of contacts which were effected.

A bare skeleton of Havasupai life and its external relations does not, however, do justice to Dr. Spier's work. His monograph is one of the relatively few comprehensive, balanced, and yet detailed studies of an aboriginal group in North America. The accuracy and vividness in the descriptions of the material culture have not been equaled since Wissler's study of the Blackfoot. The sections on basketry, skindressing, tools, houses, and clothes are delightful in their concise precision. The smallness of the group permitted detail and intimacy in the study of the social life, but only great skill and sympathy could have achieved the completeness with which individual lives emerge from the accumulated data. The observations on such little studied topics as the instruction of children, thought, mannerisms and customary behavior are not casual *obiter dicta* but illuminating data obtained only by patient vigilance and observation. Indeed the freshness of the whole section "Individual Development" should call attention to the opportunities that may be missed through the excessive formalization both in relations with informants and in presentation of material. Sinyella and Jess and such minor characters as Big Jim are delicately portrayed. As one hears their opinion on this matter and that, their relations with their fellows, the journeys they have made, and the achievements they value, they grow as personalities; but there is no trace of over-writing, nor of the introduction of personalia for ulterior motives. One must indeed admire the insight into native ways and character and the ability to recreate them which Dr. Spier shows in this study.

At the end of each section there is a comparative study of Havasupai traits and artifacts in relation to those of neighboring areas. Each of these "Comparative Notes" is a mine of information, the result of considerable labor. They are accompanied by many distribution maps, and some of them, such as those on "Manufactures" and "Individual Development" gather together material whose comparative study has long been needed.

Havasupai Ethnography is a model of field study and strengthens the high tradition of American ethnography.

C. DARYLL FORDE

MISCELLANEOUS

The Prehistory of Aviation. BERTHOLD LAUFER. (Field Museum of Natural History, Publication 253, Anthropological Series, vol. 18, no. 1, 1928. 96 pp., 12 plates.)

This is an amusing collection of myths of flying gods and winged machines, of kites and carrier pigeons. It is difficult to know if Dr. Laufer was quite serious in styling it the prehistory of aviation. Certainly modern heavier than air machines took their origin in experiments with kites and flying contraptions in the nineteenth century, as a glance at any history of aviation will show, and it is equally true that in some of the earlier forms proposed imagination was expected to achieve what mechanics could not. But it is quite another thing to infer that every myth of flying humans must have had some basis in fact because we can now suggest what might have been tried. We will agree that speculation on the matter is very ancient indeed.

The range of tales is Chinese, Indian, Babylonian, Persian, Greek, Arabic, and mediaeval European.

An item for culture historians, in Dr. Laufer's familiar style, concerns kites. These were known in China at least as early as A.D. 549, and were diffused thence to all eastern Asia subject to Chinese influence (Korea to Borneo and the Philippines), to the Near East, and finally to Europe not earlier than the end of the sixteenth century. Oceanic kites are mentioned but their relation to Chinese is not indicated.

Similarly, carrier pigeons are mentioned in China as of the seventh century and may be ascribed to India at the opening of our era. Spasmodic use of them was made in classical antiquity, the source of the idea, Persia and the Near East. But European use dates from direct contact with the East at the time of the Crusades. Mesopotamia seems to have been the home of the domesticated pigeon, a domestication accomplished in Sumerian times, and the highest development of their use occurring in the empire of the Caliphs and under the Mohammedan dynasties of Egypt.

LESLIE SPIER

Cultural Anthropology. NIRMAL KUMAR BOSE. (Calcutta, Arya Sahitya Bhaban, 1929).

This booklet of 150 pages evidently aims to make certain general anthropological concepts more familiar to English-reading Indians. It discusses, in successive chapters, What is Culture, General Nature of Culture, Structure of a Cultural Trait, Distribution of a Trait, Changes due to Contact, Evolution and Progress. This sounds as if it might be Wissler; but the work is an independent, simple reformulation, illustrated especially by Indian examples. The treatment is sane, moderate, intelligent; and—to an Americanist—seems free of propaganda motivation.

A. L. KROEBER

The Savage as He Really Is. J. H. DRIBERG. (Routledge Introductions to Modern Knowledge, No. 3). (London: George Routledge & Sons, Ltd., 1929. 78 pp.)

This is an exceedingly clearly written introduction by one who has done notable ethnographic research in Africa. Mr. Driberg effectively vindicates the savage's capacity for rational thinking by considering a selected number of topics, such as the clan, magic, medicine. Limited as to space, he wisely confines himself to peoples he knows from first-hand experience and thus achieves an essay in popularization while at the same time providing for the specialist some eminently worth-while details. Somewhat greater definiteness as to the habitat of some of the tribes, however, seems desirable.

ROBERT H. LOWIE

SOME NEW PUBLICATIONS

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REPORTS

AMERICAN ETHNOLOGICAL SOCIETY, INC.

SUMMARY OF REPORT FOR THE YEAR 1929 PRESENTED AT THE ANNUAL MEETING, JANUARY 28, 1930

Present Membership:

Life members	13	
Members	30	
Fellows	109	
Members of the Central Section of A.A.A.	9	
Special members	2	
Subscribing libraries	14	Total, 177

Changes in Membership Record:

New members: 1 Member and 6 Fellows have been added during the year.

Resignations: Members, Mrs. Henry Bartel, Mrs. S. M. Colgate, Mrs. Walton Martin, Mr. R. J. Hunter.
Fellows, Mr. Stewart Culin, Mr. G. Phelps Stokes.

Deaths: Stewart Culin, Percy R. Pyne, Jr.

Names dropped: Mr. Frederick Gallatin (mail returned).

Altered status: Drs. Franz Boas, Gladys Reichard, and Ruth F. Benedict from Fellow to Member.

Meetings Held During the Year:

Jan. 28. The Bush Negroes of Dutch Guiana, by Dr. Morton C. Kahn.
Feb. 25. Impressions of Chinese Culture, by N. C. Nelson.
Mar. 25. Present Status of Prehistoric Archaeology in Asia, by N. C. Nelson (Dr. Erich Schmidt, who was to talk on the Hittites, being absent).
Apr. 22. Songs and Dances of the Pueblo Indians—a Lecture Recital by the Misses Bessie and M. G. Evans.
Oct. 28. Excavations at Zacatenco, Mexico, by Dr. Geo. C. Vaillant.
Nov. 25. Spiritualism and Sorcery in Melanesia, by R. F. Fortune.

Publications Mailed During the Year:

Volume VIII, Parts 1 and 2. Keresan Texts, by Franz Boas.
Volume XII, Menomini Texts, by Leonard Bloomfield.

Business Meetings:

Four meetings of the Board of Directors have been held during the year, chiefly for the purpose of devising ways and means of relieving a deficit, in excess of one thousand dollars, recently incurred by the issuance of the publications above cited. One proposal, of interest to a number of the present Fellows, is to raise their status to that of Member as has been done voluntarily in three instances previously indicated.

Officers Elected for the Year 1930:

President,	Clark Wissler
First Vice-President,	F. W. Hodge
Second Vice-President,	Elsie Clews Parsons
Secretary and Treasurer,	Ruth F. Benedict
Editor,	Franz Boas
Councillors,	Clarence L. Hay, Bruno Oetteking, Gladys Reichard

E. G. NELSON,
Secretary.

THE CENTRAL SECTION OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION

With an average attendance at each session of about one hundred, the 1930 annual convention of the Central Section of the American Anthropological Association, held May 9 and 10 at Milwaukee was voted a great success by all attending. The Section unanimously adopted the following resolution:

"Resolved that the Central Section of the American Anthropological Association express and record in its minutes, its recognition and appreciation of the fine hospitality tendered its 1930 Convention by the Wisconsin Archeological Society, the Milwaukee Public Museum and the city of Milwaukee."

From the calling of the first session at 10:00 A.M. on Friday, May 9, the two days' meet was packed with interesting papers, banquets, and pilgrimages. Ralph Linton, President of the Section, presided at all meetings except at the banquet on Friday evening, when Dr. S. A. Barrett had charge.

The papers and discussions of the 1930 meet were increasingly concerned with studies of the material and facts already assembled, although many reports on discoveries and work of the past year were given.

George A. West, President of the Board of Trustees of the Milwaukee Public Museum, welcomed the members in a talk in which he complimented the Central Section on the work done, and told something of what was being done in Wisconsin with its wealth of archeological remains and materials.

President Linton responded briefly. Committees were appointed as follows: Nominating: Carl Guthe (Chairman), Wilton Krogman, and Dr. S. A. Barrett. Resolution: H. C. Shetrone (Chairman), Geo. R. Fox, and Frank Setzler. Auditing: W. C. McKern (Chairman), Dr. Charles R. Keyes, and A. T. Olmstead.

At the Friday morning session papers were presented by Dr. William M. McGovern, of Northwestern University, who spoke on "Some Problems of Ethnology in Central Asia," discussing the origin and relations of the Altaic and the Mongoloid with reference to the Turanian and the Semitic; by Dr. Berthold Laufer, of the Field Museum (read by Paul S. Martin) on "Inspirational Dreams in Eastern Asia;" by Willoughby M. Babcock of the Minnesota Historical Museum, on "A Midewiwin Cache from Northern Minnesota" (by diagrams and sketches Mr.

Babcock brought out the characters as found inscribed in birchbark, in a cavern—they were made within very recent years and are medicine songs); by Henry Field, of the Field Museum who, with an excellent series of slides, told of the year's progress in the "Field Museum-Oxford University Expedition at Kish, Mesopotamia;" and by Wilton Krogman, of the University of Chicago, on "The Illinois Archeological Survey," in which he systematized the various discoveries made in Illinois as far as evidence permitted.

At the afternoon session on Friday, A. T. Olmstead, of the University of Chicago, speaking on "Race and the Historian," pointed out that, according to anthropologists, there were no distinct races, and that the effect this was having on the historian and his work was of importance to anthropologists. With slides Henry Field showed the work done in preparing for exhibition the new group in the Field Museum, in "A New Reconstruction of Homo Neanderthalensis." Dr. M. J. Herskovits of the Northwestern University discussed "African Relationships of Dutch Guiana Negroes." Dr. Fay Cooper-Cole of the National Research Council told what had been done in making "A Tentative Plan for the Anthropological Section of the Chicago World's Fair."

The session, on adjourning, spent the time in studying methods and exhibits of the Public Museum as developed by Dr. Barrett and his able corps of assistants, and were later entertained at tea by the Museum.

The evening meeting was held at the Hotel Schroeder, where a banquet was tendered the members by the Wisconsin Archeological Society. After a most delightful meal Dr. Barrett opened the evening's program by announcing that the Lapham Medal (for preeminence in anthropological and archeological work) had been voted by the Wisconsin Archeological Society to certain men present at the tables. He then presented the medal to Dr. Carl Guthe, President Ralph Linton, W. C. McKern, and Joseph Ringeisen, Jr.

The address of the evening was given by Dr. Carl Guthe of the Museum of Anthropology, University of Michigan, who spoke on "The Hidden Story of the American Indian." Dr. Guthe developed his theme along the line of unveiling the hidden parts of the story, citing work done and theories evolved.

At the Saturday morning session Alton K. Fisher of the Milwaukee Public Museum, discussed "Dental Diseases of Prehistoric Wisconsin Indians." From a study of several hundred skulls and teeth largely from Wisconsin he found that nearly all diseases known to modern man were present in the teeth of the prehistoric American.

Dr. Charles R. Keyes, State Archeologist of Iowa, reported on "Some Archeological Features of the Middle Des Moines. His talk was illustrated.

Frank M. Setzler, State Archeologist of Indiana, detailed the work of "The Indiana Archeological Survey in 1929."

Dr. W. B. Hinsdale's paper, "Spirit Stones of Michigan," was read by title.

President Linton then called the meeting into business session: The first subject taken up was the meeting place of the Central Section for 1931. Willoughby M.

Babcock invited the Section to St. Paul and George R. Fox invited the 1931 Convention to Three Oaks. On motion of Dr. Cole, seconded by Dr. Barrett, which motion prevailed unanimously, the matter of selection of a meeting place was left in the hands of the Executive Committee.

The Auditing Committee then reported that they had examined the books of the Treasurer, Geo. R. Fox., and found them correct.

The Financial Report showed:

Amount on hand (bank statement, May 10, '29)	$229.19
Dues collected up to May 7, '30	415.91
	645.10
Expenditures to May 7, 1930	420.24
Balance on Treasurer's books May 7, '30	$224.86

The Secretary's Report showed the membership at the 1929 meet as 101, 72 Active and 29 Associate. Since that time 6 new full members were added and one Associate transferred to Active status. One member has died and two resigned, which with the four life and honorary members makes at the 1930 meet, 81 Active. Of the Associate members two were added, one was transferred, and four dropped, making the total 26, a grand total at the Milwaukee meeting of 107.

In addition to the Resolution of Thanks the Resolution Committee submitted two others:

Resolved that the Central Section expresses to the family of the late Edward Carlton Page, of DeKalb, Illinois, the sympathy of the Section in their bereavement and sorrow at his loss. And that a copy of these resolutions be sent the family and the resolution spread on the minutes of the Section.

The other resolution endorsed the program for the observance of the Two Hundredth Anniversary of the Birth of George Washington, to take place in 1932.

The Nominating Committee reported:

For President, H. C. Shetrone, Columbus, Ohio

For First Vice President, Henry Field, Chicago, Ill.

For Second Vice President, M. J. Herskovits, Evanston, Ill.

For Secretary–Treasurer, Geo. R. Fox, Three Oaks, Mich.

For members of the Executive Committee:

Ralph Linton, Madison, Wis.

E. K. Putnam, Davenport, Iowa

Robert Redfield, Chicago, Ill.

Peter A. Brannon, Montgomery, Ala.

Willoughby M. Babcock, St. Paul, Minn.

The report was received and on motion the officers, as nominated, were elected.

On a return to the papers of the day, W. S. Webb, of the University of Kentucky, gave an illustrated talk on "A New Type of Cremation in Kentucky," wherein he described a crematory apparently central for a region.

In "Wisconsin Pottery," W. C. McKern of the Milwaukee Public Museum described the types as now known from Wisconsin, and told of the work done in assigning these to certain cultures. His talk was illustrated.

Peter A. Brannon of the Department of Archives of Alabama told of pottery finds in his state, and showed reconstructions as worked out. It was a custom of the Indian inhabitants of Alabama to break up housekeeping once a year, burning the habitations and breaking the pottery.

Dr. Carl Guthe, of the Museum of Anthropology of the University of Michigan, told of a pamphlet being issued by the National Research Council, "Guide Leaflet for Amateur Archeologists," and the purpose the committee had in issuing the booklet.

In the afternoon the members and guests to the number of fifty were taken by courtesy of the Wisconsin Archeological Society to the fine group of effigies at Vernon Center, Waukesha county. W. C. McKern gave a brief talk and description of the effigies speaking from the top of one of the larger members of the group.

The pilgrimage completed the program and the members on the return to Milwaukee dispersed, except such as were members of the Committee on the Archeological Survey of the States.

All sessions were held in the Trustees' Room of the Milwaukee Public Museum, except the Banquet and lecture by Dr. Guthe, given at the Hotel Schroeder, and the Friday afternoon session held in the public lecture room at the Museum.

GEORGE R. FOX
Secretary–Treasurer

DISCUSSION AND CORRESPONDENCE

Dr. Louis Capitan

Born in 1854, Dr. Louis Capitan died at his home, 5, rue des Ursulines, Paris, on August 26, 1929.

The breadth of his activities may be judged by noting a partial list of his titles and honors.

He was Officer of the Legion of Honor; this is the second grade, the initial title being Chevalier; this was acceded to him "à titre militaire" in consequence of his services during the War while in charge of the Department of Contagious Diseases at the Hôpital Bégin at Vincennes. He was a member of the Académie de Médecine (his doctorate being that of M.D.).

He was Professor at the Ecole d'Anthropologie (Prehistoric Archaeology) and Chargé de Cours at the Collège de France (American Antiquities).

He was a member of the Comité des Travaux Historiques at Scientifiques and also of the Commission Municipale du Vieux Paris as President of the Section which took special interest in excavations.

He belonged to the Société d'Anthropologie de Paris and was a Corresponding Member of the American Museum of Natural History in New York.

At the time of his death he was President of the Société des Américanistes de Paris and Secretaire Général of the Institut International d'Anthropologie.

His life and works have been described frequently: one may compare the short biography in the introduction to the first edition of his *Préhistoire*, N. C. Nelson's article in *Natural History* for July-August 1923, pp. 419–420, and the article in the same journal for March-April 1923, p. 200.

It may be well, however, to emphasize some of his views on vexed questions (by citing from *La Préhistoire*, 2nd edition, 1925) and to recall some of his activities during the last years of his life.

On the Eolithic question (*La Préhistoire*, pp. 26 and 27) of Ipswich he says: the studies of Reed Moir, Burkitt, Breuil, himself and others

"nous permettent aujourd'hui d'affirmer, qu'au moins certains d'entre eux" (the crag specimens), "d'ailleurs rares, sent incontestablement taillés t retouchés pour constituer des outils à racler, gratter, percer").

As to the Cantal flints he goes on to say:

"Leur étude très prolongée que nous avons faite et refaite nous permet d'affirmer, qu'en l'état actuel de nes connaissances, seul un travail volontaire peut expliquer le façonnement d'un certain nombre des silex miocènes du Cantal."

Thenay and Boncelles he does not accept.

A note on Red Paint (*Préhistoire*, p. 35):

Nos fouilles à La Ferrassie, avec Peyrony, nous ont démontré l'existence de matières colorantes dans les feyers moustériens (manganèse et ocre rouge); Serait-ce l'indication d'un emploi plus ou moins rituel de la couleur?

His opinion on intentional sepulture in Mousterian times is clear but not bigoted (*La Préhistoire*, p. 37):

Il paraît établi que, au moins, certains cadavres, comme nous avons vu à La Ferrassie, avaient été inhumés dans les fosses rudimentaires, creusées dans les foyers et recouvertes de quelques pierres et du contenu même des foyers.

He says as to the meaning of Palaeolithic art (p. 52):

Neus considérons cet art [Aurignacian] depuis nes premières observations in situ (1901–1904) aux Combarelles et à Font de Gaume, comme la manifestation d'une pure opération fétichique; rituelle par besoin et précise par nécessité.

A society in which Dr. Capitan took great interest is the Institut International d'Anthropologie founded after the War and now counting "Offices" in nearly all European countries and formal representatives in many others including the United States. Sessions have been held in Paris, Liége, Prague, and Amsterdam; the next is planned for Oporto and Coïmbra in 1930. As Secrétaire Général Dr. Capitan has been the life of the organization, carrying it over many a difficulty, and as Presiding officer of the Prehistoric Section has shown extraordinary tact and knowledge; under his impulsion the Institut, affiliated with the Société d'Anthropologie et Archéologie Préhistoriques, has a certain future of success before it.

In later years he laid great stress on two subjects dear to his heart: the origin of the American race or races, and the development of the comparative method in prehistoric archaeology. At the Collège de France he emphasized the cultural elements similar or identical to be found in the two Americas on the one hand and in Oceania and Asia on the other; paralleling Dr. Rivet's linguistic theories he felt assured that all migrations were not limited to the Behring Straits route, but with his characteristic caution he never let a lecture pass without referring to the "difficultés énormes" standing in his way.

He always insisted that a culture corresponding to the Paleolithic would be found in America and took great interest in the presentation by Georges Montandon of the photograph of the "Singe d'apparence anthropoïde" discovered by de Loys near the Colombia-Venezuela boundary; this discovery, of course, if admitted, deals a blow against the argument against independent American evolution based on the absence of anthropoid apes.[1]

At the Ecole d'Anthropologie his Monday course, which he varied each year, was largely devoted to an exposition of modern methods in prehistoric research; reconstruction through drawings and in imagination of the prehistoric scene enforced by comparison with the more primitive of existing cultures.

A great loss to science, his is likewise a personal loss not to be made up; the writer felt for him as he had felt for the late Professor Putnam an affection that stood apart from others, warmer, deeper and more respectful.

CHARLES PEABODY

[1] Cf. l'Anthropologie, Report of the meeting of the Institut français d'anthropologie for March 20; 1929. George Montandon, Journal de la Socité des Americanistes de Paris, XXI, I, 1929. pp. 183 ff.

Wesley Bradfield

Wesley Bradfield, curator of the Museum of New Mexico, who died in Santa Fe, New Mexico, November 10, 1929, was born in Michigan. He was the son of a Methodist clergyman. He was graduated from college at Alma, Michigan, in 1900; attended Cornell for two years, and later majored in forestry at the University of Michigan, subsequently securing a position in the U. S. Forest Service at Washington, D. C. In 1909 he was sent to Santa Fe for field research in forestry. He later resigned, went into the curio business, became an expert photographer, and in 1912 was dispatched by Director E. L. Hewett of the Museum of New Mexico to Guatemala to take photographs and procure moulds of the great Mayan monuments at Quirigua. Casts made from these moulds, exhibited at the San Diego exposition, are still marveled at in San Diego. Bradfield became associate director of the San Diego Museum in 1926. Following his experience on numerous field expeditions of the School of American Research, he entered upon his most important task, excavations on the Cameron Creek sites in the Mimbres region of Grant county, New Mexico. These were partly financed by the Chino Copper Company, Manager J. M. Sully of that concern and Daniel C. Jackling, head of the Nevada Consolidated and other great copper companies, taking a personal interest in this work. Bradfield spent three seasons in the field there. In the summer of 1929 he did similar work in the foothills of the Sacramento mountains in Otero county, New Mexico, Attorney W. A. Hawkins bearing a share of this expense. While at work on his report of the Mimbres field work, involving pre-Spanish remains dating back to the pit-house culture, he had to go to San Diego for an operation, returned, and passed away after an illness of less than a week, following a sudden seizure with pneumonia.

Bradfield was well known as a lecturer, and developed unusual skill in the reconstruction of pottery and photography of the same.

As an archaeologist he had two outstanding characteristics. Precision was his guiding star, almost his obsession. He was capable of meticulous, tireless accuracy with the minutiae of field and laboratory work. Yet with this determined striving for impersonal, adding-machine procedure with hand and brain, he had the broadest and most human view of the whole and aided wonderfully in vitalizing archaeology. Museum exhibits were to him tangibles with which to tell a living story of intangible people.

He recognized that in order to compare material from different areas, to identify intrusive pieces and so trace culture contacts, and to follow development of craft in one group, an accurate systematic method was imperative. Impatient with technical obstacles, if a means was not at hand, he devised one. Thus he worked out a way to photograph bowl interiors and flatten out the design without distortion; discerning a long-obvious need, he completed a finely graduated color nomenclature for pottery. In the technique of ceramics and improvement of analytical methods, other accomplishments were the development of objective measure of porosity, specific gravity, hardness, and determination of firing conditions. The photographic process mentioned above he used to advantage in illustrating what has been pro-

nounced the most nearly complete design sequence recovered in the Southwest; largely so because of the astonishing sharpness of his eyes and his patience in recording data.

The spirit of Bradfield's approach to his work, and his attitude toward it, approximated the ideal. To those with whom he came in contact, he gave archaeology a new meaning through his magnetic, sparkling personality, alert intelligence, keen sense of humor, humanity, unfailing energy, ever-fresh and infectious enthusiasm. Despite his absorption in his beloved work, he found time to give of himself generously in civic, fraternal, and general community affairs. It is most unfortunate that his life had to be cut short at the top of his stride, just when years of faithful labor under many handicaps were about to reach their fruition in the wider recognition he so richly earned. It has been said authoritatively that he was fitted as few others to assume and maintain a leading part in the new progressive trend in museum work.

E. DANA JOHNSON

PALESTINE RICH IN RELICS OF THE OLD STONE AGE

Professor George Grant MacCurdy of Yale University, Director of the American School of Prehistoric Research has just received word from Dr. Hackett, who with Mr. Theodore D. McGown is representing the School in the latter's joint excavations with the British School of Archaeology at Jerusalem, that during the first ten days of April no less than 5,000 tools dating from the Aurignacian epoch of the Old Stone Age were dug from a single cave of the group south of Haifa. Miss D. A. E. Garrod of the British School is in charge.

The season's excavations will terminate in time for Dr. Hackett and Mr. McCown to take part in the work of the tenth annual summer term of the American School of Prehistoric Research, which will open in Paris on July 1, under the direction of Professor MacCurdy. The following students are enrolled: L. Cabot Briggs, Harvard University; Miss Jeanne Ernst, Mount Holyoke College; John Gillin, University of Wisconsin; Raymond M. Gilmore, University of California; Robert F. Greenlee, Northwestern University; Robert H. Merrill, University of Michigan; John Z. Miller, Lehigh University; Panchanan Mitra, University of Calcutta and Yale; Cornelius B. Osgood, University of Chicago; Froelich G. Rainey, University of Illinois; and Miss Lucile Serrem, Columbia University.

An anonymous donor has given a scholarship of the annual value of $750.00 to be awarded to a student of the American School of Prehistoric Research. By the terms of the gift, the scholarship may be awarded only to a student of Mount Holyoke College. The first award has just been made to Miss Jeanne Ernst of Worcester, Massachusetts, who will take part in the tenth summer term of the Prehistoric Research, which will open in Paris, July 1, under the direction of Professor George Grant MacCurdy of Yale University.

Assisting Professor MacCurdy in the field there will be three of his former students: J. T. Russell, Jr., U. S. National Museum; V. J. Fewkes, University of Pennsylvania; and Robert Ehrich, Harvard University.

The Origin of the Graphic Art of the Ancient Cave Dwellers[1]

It is well known that the oldest examples of creative art productions by man in the Old World are the drawings and plastic works found in ancient caves. The earliest date from the Aurignac and stretch through the oldest to the latest Paleolithic periods.

It can be said that these artistic efforts represent the beginning of human creative art and that an inquiry into their origin signifies an inquiry into the origin of all creative art. How may these works have originated? What may have led primitive man to delineate on the walls of caves the things and especially the animals that were familiar to him? In studying these questions, the first point to be considered is that nearly all of these drawings and carvings are situated in portions of caves, difficult of access, in hidden places, nooks and corners. This proves therefore, beyond a doubt, that they were made by artificial light in places of refuge sought and permanently inhabited by human beings for hiding, protection from wild animals, or other reasons.

These facts justify a conjecture about the origin of the pictorial productions, which was suggested to me by a peculiar circumstance in a particular case, namely, the fact that in one cave small button-like projections on the surface of the rock were used to represent eyes in the drawing of a bison. It is a familiar fact that often, on uneven surfaces like those of the walls of a cave, figures, outlines, and lines appear which with the exercise of some imagination can be construed into resemblances to human and animal forms. Such resemblances often occur in masses of rocks and these are given names in consequence, as, for instance, in the Adelsberg cave, where a great number of rock formations are designated by the names of the things, persons, or animals which they are supposed to resemble.

Such imaginary, illusory forms are particularly apparent in a faint, artificial light which, proceeding from one or more sources, throws sidelights on rocky walls. It was precisely such an illumination that the ancient cave-dwellers employed, being limited to burning chips, torches, or the primitive lamps which are said to have been found.

I therefore believe that it can readily be assumed that individual cave-dwellers, gifted with fantasy and imagination, on observing at leisure the walls of the caves in which they spent many hours, may have thought they saw outlines of objects and particularly of the animals which belonged to their surroundings, such as the bison, the mammoth, cave bear, wild horse, etc. It would require but a short step from this to an attempt to draw these outlines with a coloring material such as ochre.

The same process can often be observed at the present time. On uneven white walls, faintly lighted, particularly in places resorted to by many persons, one often finds outlines of faces, animals, etc., drawn by people who do not know how to draw, but are merely stimulated to trace imaginary outlines. This is the same primitive process employed by the cave-dwellers.

[1] Published in the Zeitschrift des Hauptverbandes Deutscher Höhlenforscher. Jahrgang, 1928. H. 4. Berlin, 1928.

In agreement with this is the fact that the cave drawings are almost always in a marked degree realistic, as the images the cave-dwellers fancied they saw were, of course, no stylistic types but representations of the natural forms with which they were familiar.

Thus the foundation and root of all of the creative art of later centuries may well be attributed to the fantasy and imagination existing in the profundities of human subconsciousness.

P. SCHELLHAS (Berlin)
(Translated by ZELIA NUTTALL)

INDEX OF MAYA RUINS

During 1923 and 1924 Oliver G. Ricketson and the writer were working under the direction of Dr. Alfred M. Tozzer at the Peabody Museum of Harvard University. As a task for the requirements of a Master's degree we were instructed to work out an index of the ruins in the Maya area. The results of this work were multigraphed in an edition of thirty-five copies of both text and map, and distributed to a number of scientific libraries and individuals interested in the field.

Upon my arrival in New Orleans as archaeologist in the Department of Middle American Research of Tulane University, this index was considerably elaborated, and as it is my belief that it will be useful to students to be acquainted with it I am giving the following description.

It may be best to start with the map. This was compiled from about fifty different maps, both old and recent. Maps of southern Mexico, Guatemala, and Honduras are inaccurate at their best, and it was therefore no easy undertaking to locate cities, and even less to locate ruined cities reported by explorers without geographic training.

Since the original map was finished, corrections and additions have been made, and we have attempted to keep the map up to date.

On the said map all the major geographical features are shown, present geographic divisions are maintained, and rivers and large modern towns are located, so that the explorer can orientate himself.

All ruins, whether buildings or groups of mounds, are indicated by an inverted T.

Next we come to the Index. This consists of several sections:

(*a*) An alphabetic list of the names of all ruins, giving the present geographical units in which they are located. M. stands for Mexico, G.—Guatemala, B. H.—British Honduras, H.—Honduras, S. S.—San Salvador, etc. Taking an example at random: Toniná, Chiapas, M. gives the name of the ruins of Toniná, in the state of Chiapas, Mexico.

(*b*) An index of large cards, filed under states or departments, i.e., the states of Veracruz, Chiapas, Tabasco, Campeche, Yucatan, etc., of Mexico, and the various departments of Guatemala, and so on. On these cards first come the names of the ruins (if Indian this name is translated into English), and then the geographic location. Then follows a brief description of the structures encountered, as for example, buildings, mounds, bridges, stelae, altars, etc. This is followed by a bibli-

ography of the authors who have visited the ruins and actually contributed to our knowledge about them. Only original investigators are given. In the bibliography one finds the author's name, the year his book or paper was published, and the page on which he describes the ruins in question. After this follow indications regarding pictures of structures, maps, and plans.

This data is contained on the leading card, and followed by other cards on which are pasted all the photographs and drawings it has been possible to gather on the site, as well as tracings of maps and ground plans.

Furthermore one will find a card for every monument on record whether it has a legible inscription or not. If the inscriptions on a monument have been deciphered the date is given in full in units of the Maya calendar, and with bibliographical references to those who read the inscriptions or made important comments on them. For example:

CHACMULTUN M. YUCATAN

Buildings, mural paintings. Maler, 1895, pp. 249–50; Maler, 1902, p. 199, fig. 2, Phallic temple, right wing, south façade. Thompson, 1904, pp. 2, 8, 9, plan, X. Spinden, 1913, pp. 104–5, elevation and ground plan. Holmes, 1895. Reygadas, 1928, pp. 181–186; Marquina, 1928, pp. 67–70; Mariscal, 1928, pp. 15–21.

Large photographs from a site are kept in special drawers.

(*c*) Bibliography. This is written on small cards, and contains every author mentioned on the large cards, giving author's name, titles, the year of publication of book or paper, and where published.

(*d*) Finally the index contains a list of all Maya dates in Maya calendar units. Whether a date has been recorded as an initial series, katun or tun end, or has been reached by secondary series, a card will be found for it in the date-index. This card gives a cross reference to the card for the monument on which the date is found in the main index of the ruins.

When one finds a new dated monument, or makes a new reading of an inscription, one has only to go to the date-index immediately to find cards for all the identical dates recorded on monuments in other parts of the Maya area.

Several institutions and individuals who have worked in the Maya field have cooperated in the most generous way to make this index useful, and special mention should be made of the Peabody Museum of Harvard University, through Dr. A. M. Tozzer; the Museum of the American Indian, Heye Foundation, through Professor Marshall H. Saville; and of Messrs. Oliver Ricketson, H. J. Spinden, J. Eric Thompson, Thomas Gann, and Erwin Dieseldorf.

The value of the index is manifold. When an expedition prepares to go into the field it first advises us of its main route. We then furnish a tracing of our map, indicating which sites are located on or near the route. We give copies of our cards with bibliography of each site, and a list of plans, maps and pictures on hand. In case an institution has explored a group of ruins, but as yet has not published anything on them, then we furnish a list of the pictures and plans which have been made, and refer to investigator the the Institution which conducted the research.

We do not release unpublished pictures and plans, but leave it to the man going into the field to communicate directly with the Institution which initiated the given piece of work.

When expeditions return from the field we expect them to furnish us with a report of their findings, so that our index may be kept up to date and serve its purpose. The sooner an expedition reports its results, the more certain it is of getting credit for its work, and protecting its priority to a new "discovery."

Our index may aptly be called a clearing-house of information on Maya field work, and it should be obvious to all those who work in this field that it is to their advantage not only to draw upon us for information but also to give us their cooperation, and place their information at our disposal.

FRANS BLOM

TULANE UNIVERSITY,
NEW ORLEANS, LOUISIANA

THE CHEWING OF TOBACCO IN SOUTHEASTERN NORTH AMERICA

Elsewhere I have noted the practice of artificial blackening of the teeth among the Natchez, Houma, Bayogoula, and Tunica of the lower Mississippi valley, and the use of tobacco pill mixtures by the Natchez. I suggested that these phenomena were marginal to the chewing of tobacco with lime, which I presumed must have once existed in Mexico.[1] Since then I have shown that lime-and-tobacco chewing was a feature of archaic Mexican culture.[2] I think now that it probably also existed among the Chitimacha neighbors of the Natchez. First, there is no note of any smoking nor evidence of pipes among the Chitimacha; and second, the Chitimacha origins myth mentions only the chewing of tobacco.

The Duralde manuscript in the library of the American Philosophical Society in Philadelphia (Jefferson Collection), of date ca. 1800, which is in part reprinted by Swanton,[3] gives the Chitimacha origins myth. The creator made the waters; then a diving animal brought up the earth; then the creator "formed men whom he called Chitimacha" and called the land Chitimacha. The myth states that the original home of the Chitimacha was in the region historically occupied by the Natchez. (This recalls the fact that the Chitimacha called the Natchez their "brothers.") The first men suffered many misfortunes and "in despair lost their repose." Then the creator for this reason created tobacco, and "they *chewed it* and reposed." Then women were created; later, fire. But with the coming of fire there is no mention of smoking.

This evidences only chewing; not chewing with lime. But the facts mentioned above concerning Mexican chewing and Natchez dental blackening suggest that

[1] W. C. MacLeod, Natchez Cultural Origins. American Anthropologist, 1926.

[2] W. C. MacLeod, Central American Origins of Northwest Coast Culture. Anthropos, 1929.

[3] J. R. Swanton, Indians of the Lower Mississippi. Bulletin 43, Bureau of American Ethnology, 1911.

the Chitimacha probably chewed lime with their tobacco within the historic period.

In connection with these Chitimacha data I wish to make note of information from the Negroes and "poor whites" of tidewater Virginia. My informant is a person born and raised near Tappahannock, Virginia, who left there ten years ago.

Both the Negroes and the poor whites, in spring and summer, would cut the sappy roots of sassafras, dogwood, and althea. Then they would bake clam shells to make lime. Dipping the stem into the lime they would then vigorously rub their teeth and gums with it and then chew on the stem with the lime, swallowing the lime with the juice of the stem. Old folks did this to remedy acid stomach. Children did it because they relished the flavor. It appeared to have the effect, I am told, of making the teeth a brilliant white.

Adult Negroes and "poor whites" in this area very frequently used tobacco in the form of snuff, but never chewed lime with tobacco. The sappy stems with lime were frequently chewed after using snuff to sweeten the mouth.

The Negroes of this area used the blowgun as a toy and had other practices which are possibly borrowings from the Indians. They have other traits that are patently colonial white customs,—such as snuffing tobacco. As for this chewing of lime with herbs, I cannot guess whether it is of Indian or of colonial white derivation. In either case it is significant for the problem of the history of lime- and herb chewing in America and the Old World.

W. C. MacLeod

University of Pennsylvania,
Philadelphia

A Note on Navaho Pottery

Few of the Navaho women of today remember the precise technique of Navaho pottery; fewer still, if any, still make this crude ware. At Dr. A. V. Kidder's request I tried in the course of field work among the Navaho in the summer of 1929 to assemble a few facts about pottery making, but could get nothing tangible on the subject till the latter part of the fall of 1929, when I received a letter from my interpreter, Albert G. Sandoval, of Lukachukai, in answer to my suggestion that he make inquiries among the older women. The passage dealing with pottery reads as follows (slightly edited by E. S.):

> I want to tell you what I found out about the Navaho pottery. I got this from my mother-in-law, who used to make some. She says that first you look for a certain kind of mud (adobe), the kind that is not apt to crack when it starts to dry. She says that it is rather hard to find this kind of mud. It is reddish in color and very sticky when you start to work it. And then you pick some of the broken pottery around in the ruins in the Navaho country, and then you grind that pottery up and mix it with the adobe and work it into a stiff dough, so that you can work the clay into any shape you want and it is ready to be made into a pot or bowl.
>
> First you take a piece of that clay and flatten it out and shape it like a sauce-dish in any size you want. Next you take small pieces of the soft clay you prepared and roll them as a baker rolls out the dough when he is making bread, and wind them around one on top of the

other, using a corn-cob to smooth it inside and out as you go along to the finish. When you have it all finished and the pot is dry, but not too dry, you use a small boulder, about the size of a hen's egg, and very smooth, to rub it and polish it in that way. She says you are to keep the pot inside of a hogan while doing this because if you do it outside or in the draught, the pots are liable to crack on you. And another thing—not everybody can go into where they are making pots because it is bad luck, that is, you are bound to have bad luck if you allow everybody to come and watch you.

You keep those pots inside of the hogan until they are perfectly dry, and when they are thoroughly dried you are ready to bake (i.e., fire) them. In baking them, you rub together sheep manure, enough to completely cover your pots, and set fire to the sheep manure with the pots in it. Let it burn gradually, and when it all burns up, your pots are ready for the pitch, which you have ready for them. The pitch you apply to the pots while it is hot. And that is about as well as I can explain the making of pots to you in English.

EDWARD SAPIR
ALBERT G. SANDOVAL

THE DISTRIBUTION OF SECONDARY CREMATION AND OF THE DRINKING OF ASHES

In Father Schmidt's study of *kulturkreise* in South America it is noted that secondary cremation followed by drinking of the ashes of the deceased exists throughout two very extensive areas in the Amazon valley; also in the Guianas, and among the island Carib of the Antilles. Frazer states that drinking of the ashes is a mortuary custom found only in South America, *absent in the Old World* (although possibly survival is evidenced in the drinking of Mausolus' ashes by Artemisia[1]).

But I have to add a further note on distribution which evidences the influence of perhaps Antillean culture in the lower Mississippi valley.

Cabeza de Vaca, prior to the middle of the sixteenth century, noted of the Indians of Galveston island (the Texan home of the Atakapa in the early eighteenth century) that:

> they bury all their dead except their physicians whom they burn and turn their bones into powder which, at the year's end when the funeral rites are consummated they give to their kindred to drink up in a draught of water.[2]

This indicates drinking of ashes but implies primary cremation.

The Chitimacha were neighbors of the Atakapa of this area. The modern Chitimacha told Swanton that in the olden days they themselves first buried their dead; then later dug up the bones, cleaned them of flesh, burned the bones, and preserved the ashes in baskets, which were preserved by relatives of the deceased. Here we have evidenced secondary cremation.[3]

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[1] F. P. W. Schmidt, Kulturkreise und Kulturschichten in Südamerika. Zeitschrift für Ethnologie, v. 45, 1913. W. E. Roth, The Guiana Indians (Annual Report of the Bureau of American Ethnology, 642, 651, 654, 657, 1920–1921) gives the Guiana and Antillean distribution. For Frazer's note see J. G. Frazer, Totemism and Exogamy, 1: 74, 1910.

[2] Cabeza de Vaca, Narrative, circa 1540 (in Orig. Narrs. of Amer. History).

[3] J. R. Swanton, Indian Tribes of the Lower Mississippi and their Neighbors. Bureau of American Ethnology, Bulletin 43: 350, 1911.

It is very possible that we have only some of the facts in both cases noted. It seems to me that fuller note-taking by Cabeza de Vaca might have revealed the cremation of shamans as secondary cremation; and that did we know more of olden Chitimacha customs, we might learn that ashes drinking formerly obtained among them. But in any case we have just west of the lower Mississippi evidence of both secondary cremation and of ashes drinking, although we cannot be too positive that the two were linked.

Additional Note

Since writing the above I have lately met with two examples of drinking of ashes in the Old World, which may perhaps, or may not, in some way, be related to the American phenomena. R. B. Mitra in Spiritous Drinks in Ancient India (Journ. Bengal Branch of the Royal Asiatic Society, 43: 3, 1873) gives an account from ancient India of a teacher who unwittingly slew his pupil and then afterwards drank the ashes of his cremated victim. J. MacDonald in East Central African Customs, (Jour. Roy. Anthrop. Soc. Gt. Brit., 22: 111, 1892–93) writes for the Basuto and the Angoni that warriors sometimes cut out the heart and liver of enemies and in order to acquire bravery and other soldierly virtues burn these organs to ashes and then stir the ashes in gruel or broth and lap up the broth and ashes with one hand, throwing the mixture into the mouth. The mixture must be taken this way, not eaten in the fashion in which one eats ordinary food.

W. C. MacLeod

University of Pennsylvania,
Philadelphia

The Sun Dials and Other Time-Route Recorders of the Northern Woodlands and the Northwest Coast

In the American Anthropologist of 1924, H. I. Smith described a primitive sun dial designed as a time-route recorder, in use by the Bella Coola, the Carriers, and the Chilcotin, of the northwestern coast and plateau. A circular hoop was tied to a slanting stick set up in the ground, the shadow of the hoop marked in the soil. Subsequent visitors to the spot, by noting the deviation of the shadow of the hoop from the mark made by their predecessors, could estimate the time passed since the first party broke up camp and thus also estimate the distance the first party had by now probably covered. Mr. Smith adds:

> The distinctive character of this time-route recorder may possibly be useful in the solution of the problems of distribution.

In H. Y. Hind, Explorations in Labrador (2 vols., 1863) I note two other forms of time-route recorder, one used by the Naskapi of Labrador, the other by the Ojibway of the Lake of the Woods, northwest of Lake Superior.

The Naskapi set up merely a stick without any hoop, marking the shadow of the stick when leaving camp; followers noted the deviation of the shadow from the mark indicating the shadow's former position.

It is difficult to see any added utility in the Bella Coola use of the hoop in addition to the stick.

The Ojibway method was not that of the sun dial. Two sticks are set up in the snow; a line drawn in the snow, by anyone arriving later at the spot, between the two sticks, directs the eye to the point in the sky where the sun stood at the time the sticks were set up and the line drawn. I think that since a mark drawn in the snow to indicate a sun dial shadow might disappear, this double stick device with the line to be drawn by the follower was very likely an ingenious improvement on the sun dial as a time-route recorder.

Hind's notes are as follows. After describing the use of the bow drill for fire-making among the Naskapi he adds (1: 150):

> Some days afterward I was walking before the rest of the party with Michel, being perhaps an hour in advance. We sat down to rest on a boulder lying close to the portage path, when the Indian, who was always doing something, cut a stick about two feet long, and selecting a sandy spot on the path fixed it upright and drew a line in the sand where the shadow of the stick fell. His object was to communicate to Louis who was following us, the time of the day when we passed the spot where he had placed the stick. The position of the sun would of course be indicated by the shadow of the stick, and by referring to the line in the sand Louis could form a tolerably correct notion of the distance we were ahead.

Of the Ojibway he adds:

> When I mentioned this to Mr. Gaudet, he said that he once sent an Indian belonging to the Lake of the Woods, in the winter, to a camp some fifty miles distant, intending to follow him the next day. Three times he observed on the track which the Indian had passed, two sticks stuck in the snow; so that by drawing a line between them, and looking in the direction to which it pointed, it would show the position of the sun in the heavens at the time the Indian placed them there, and thus indicate the hour at which he had reached the spot.

In the case of these time-route recorders possible European influence should be taken into account. It seems to me, offhand, that they are probably aboriginal. If so, despite the differences in the devices, they would seem to indicate cultural contact between the Great Lakes area and the remote northwest in this instance. One may also suspect that comparable devices may be evidenced in northeastern Siberia. It is interesting and perhaps profitable to speculate on their relation to the astronomical structures of the more advanced civilizations.

WILLIAM CHRISTIE MACLEOD

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ON A METHOD OF MAKING RUBBINGS

For the benefit of those archaeologists confronted by the problem of picturing incised, stamped, or other rough surface designs, I am describing below a technique that I have found to be most satisfactory. It is one used by the Japanese, and has been employed by orientalists in taking off inscriptions as well as decorations.

It was while making a study of the ceramic art of certain sections of the

southeastern United States that I chanced upon this method. Regardless of how carefully drawn, incised or stamped motifs lose much of their individuality and character. Even when photographed, many of the lines become shadowed or overemphasized. In many cases, irregularities are most important, and unless carefully handled their part in the design composition is lost. In making rubbings according to this method, even the finest of lines appear most distinctly, and when photographed make a clear plate. A description of the method I mention is as follows:

Small sheets of a good grade of hand-made Japanese paper are moistened between blotters. When evenly soaked, a sheet is placed over the design that is to be taken off. With a daub of fine silk filled with cotton, the paper is pressed into the irregularities of the pottery surface. If there is too much moisture in the paper, a dry sheet should be placed over it so as to absorb all excess water. Before the paper dries, it is patted with a second daub made of the same material as the first and one that has been pressed on a pad into which lamp black oil paint has been worked. It will be found that the quicker the motion used in the patting, the better the results. The paper is then gently pulled from the surface of the jar and placed on a blotter until thoroughly dry. The process of moistening and then drying paper of this kind will often cause it to become wrinkled. However, when mounted for photographing, these wrinkles can be easily smoothed out. When mounting rubbings for photographing, it is necessary to paste them evenly on heavy cardboard, being careful not to allow any ridges or folds to remain. The results should be clear and present an accurate picture of the design. The process of making plates of these is the same as used for drawings or photographs.

MARGARET E. ASHLEY

WHAT IS CLOCKWISE?

Most reports which have appeared in recent years have carefully mentioned the direction of twist of cordage and textile strands when those objects figured in the discussion. The terms right and left, clockwise and counter- or anti-clockwise, are variously used, according to the writer's preference for long or short words. This duplicate terminology, while unnecessary, probably is not confusing. Right is clockwise, left is counter- or anti-clockwise, to all concerned.

There is disagreement, however, as to the application of these terms. Consequently all information on the subject compiled to date is valueless unless an illustration accompanies the verbal description, as the reader can easily convince himself by the examination of a few reports, particularly in the field of Southwestern archaeology. An excellent report which appeared recently has constant reference to left twist, while invariably the illustration of the object shows it to have the right spiral. Another writer in the same field refers to clockwise twist and his illustrations consistently show the right spiral. A compilation of the data contained in the two reports would be an utter waste of time, for one writer contradicts the other at every mention of the word twist.

The explanation of this unfortunate state of affairs is probably to be found in the varying individual conceptions of how twisting is done and how its direction is determined. If two pieces of string are twisted into a single composite strand by holding one end in either hand, the hands move in opposite directions during the operation of twisting; otherwise no twist would result. Which hand is to determine the direction of twist? Again, if two pieces of string are tied to a fixed object at one end, and twisted to the left from the other end, the resulting strand spirals to the right. Shall the direction of twist or the direction of spiral be the criterion?

Most writers seem to prefer the direction of spiral; wisely, for it alone is constant, regardless of the method of twisting or the angle of view. It is easily determined, even in a picture, for every twisted fabric in which the individual strands are visible shows a constant spiral trend to either right or left. The use of the terms left spiral and right spiral would avoid the possibility of misinterpretation and help to establish a uniform practice.

Here at Gypsum cave we are finding a consistent inconsistency in twists. Cordage of apocynum and cotton from the Pueblo horizon is usually left-spiraled, yucca right-spiraled. Similarly, apocynum is left, yucca right, in the Basket Maker horizon. The Paiute of Moapa valley used the left spiral with few exceptions in both apocynum and yucca cordage; but their fur cloth shows the right spiral, as does that of the Pueblo in one fragment found at Gypsum cave. These facts are in themselves interesting. The reasons behind them, when disclosed, may prove important. Meanwhile it is surely desirable to establish a method of recording such data which will facilitate comparison of the findings of one investigator with those of another.

(Written from Gypsum cave, Nevada, April 20, 1930.)

CHARLES AMSDEN

SOUTHWEST MUSEUM,
LOS ANGELES

ANTHROPOLOGICAL NOTES AND NEWS

Some Shell-heaps in Nova Scotia

Bulletin No. 47 entitled "Some Shell-heaps of Nova Scotia," issued recently by the National Museum of Canada, contains the following reports: (1) The Archaeology of Merigonish Harbour, Nova Scotia, by Harlan I. Smith, and (2) The Eisenhauer Shell-heap, Mahone Bay, Nova Scotia, by W. J. Wintemberg. It also contains numerous drawings of tools, fragments of pottery, and other objects found as a result of excavation.

The shell-heaps found in Merigonish harbour were the largest in this locality that had not been ransacked, and were sufficiently large and typical to afford much knowledge of the culture of the aboriginal coast dwellers along this part of the Atlantic seaboard. Most of the shell-heaps found were in sheltered places, some on southern shores and others on islands. In undertaking this investigation it was desired to compare the culture of the Algonkian Indians of the Maritime provinces with the culture of the Iroquois Indians of Ontario, one of whose villages had been excavated previously. Earlier investigators had suggested that the Eskimo may have inhabited this region but Mr. Smith states that although it is possible that a few Eskimo may have visited these prehistoric Micmac sites and that the Micmacs may have obtained some objects and ideas from them such as the toggle points for harpoons, the sites excavated were undoubtedly of Micmac origin.

As a result of this investigation considerable archaeological material was collected most of which is described in the report.

The Eisenhauer shell-heap is one of several small shell-heaps on the shore of Mahone bay, Lunenberg county, on the south coast of Nova Scotia about seventy miles west of Halifax. This shell-heap was discovered about 1908. When a new road was being made from Kaulbauch cove to Indian Point a cut was made across the south side exposing the shells. The excavation work for the National Museum was done by Mr. Wintemberg.

Mr. Wintemberg states that this shell-heap was small, shallow, and unstratified, so that it was probably of only one period. It is considered prehistoric because only aboriginal artifacts were found in it. The material found is described in detail.

Copies of this report, the price of which is 25 cents, may be obtained upon application to The Director, National Museum of Canada, Ottawa, Ontario.

Dr. H. D. Benjamins

Dr. H. D. Benjamins, the well-known West Indian specialist, celebrated his eightieth birthday on February 25th, 1930. Born at Paramaribo, Surinam, he was principally educated in Holland, taking his degree of Ph. D. in 1875 at the University of Leiden.

After his return to Surinam, where Dr. Benjamins spent nearly thirty years of his life, he became Inspector of Education, and besides held several government

positions. In 1885 Dr. Benjamins accompanied Professor K. Martin, the geologist, on his expedition to the Upper Surinam river. Some time afterwards when Dr. ten Kate traveled in Surinam for anthropological purposes, he accompanied Dr. Benjamins on two different trips, one to the upper Para, and the other to the Saramacca. On the latter the Becoe-Maesinga Bush Negroes were visited.

While Dr. Benjamins was on furlough, but especially after his definite return to Holland, he devoted himself to various pending questions, both historico-geographical and political, such as that of the Lawa-Tapanahoni and the western frontier of Dutch Guiana. On the latter (Corantine river) question Dr. Benjamins wrote not less than ten articles in *De West-Indische Gids*, of which magazine he is an associate editor. Taken as a whole, these articles form a brilliant and convincing plea for certain important territorial claims against British Guiana. However important these publications may be from a geographical and political point of view, Dr. Benjamins' purely scientific contributions are chiefly to be found in the excellent *Encyclopaedie van Nederlandsch West-Indië*, edited by him and Mr. Joh. F. Snelleman at the Hague during 1914–17. The numerous, mostly unsigned articles which Dr. Benjamins contributed to this standard work give evidence of his remarkable special and profound knowledge of things West Indian. The bulk of Dr. Benjamins' scientific and literary work was published in *De West-Indische Gids* between 1919 and now. Even the titles of these papers are too numerous to be listed here. They treat of ancient Guianese history, bibliography, folklore, statistics, immigration, etc. However, mention must be made of the two most recent articles in the magazine above quoted, viz., Treef en lepra in Suriname and "Sneki-koti" inentingtegen den Geet van vergiftige slangen. Both papers deal with Negro superstitions, and purport to show the danger of the belief in *treef* and the inefficiency of the so-called inoculation against snake poison.[1]

Hemianthropus Osborni

Fragments of skull, face-bones, jaw and shoulder-blade, found by Professor Wilhelm Freudenberg in Ice-Age gravels of the Bammental near Heidelberg, have proved upon piecing together to be the remains of a big ape-like creature with a brain bigger that that of any known anthropoid ape, either living or extinct, says *Natural History*, a publication of the American Museum of Natural History, New York. The animal has been named by its discoverer *Hemianthropus osborni*, in honor of the seventieth birthday of Dr. Henry Fairfield Osborn, president of the American Museum.

The *Hemianthropus* part of the name is Greek for "half-man." The creature, if an ape, was a highly advanced kind of an ape. Its somewhat gorilline face was uncommonly wide, and its brain is stated to surpass that of the Trinil skull from Java, and to equal in size the brain of Neanderthal man. The Trinil skull, *Pithecanthropus*, is considered to be human by a great many scientists, though some are of the opinion

[1] The Notes on the Saramaccaner Bush Negroes of Dutch Guiana (American Anthropologist, n. s., 31; 481–482, 1929) induced Dr. Benjamins to write an exhaustive comment on Dr. Morton C. Kahn's article.

that it belonged to an ape; but Neanderthal man is unquestionably human. The editor of *Natural History* adds a note that "the question of the validity of *Hemianthropus osborni* as distinct from Heidelberg man remains an open question."

The Heidelberg man has been represented to date only by a jawbone found at Mauer near Heidelberg, in sands of the same geologic age as the gravels that have yielded the bones of *Hemianthropus*. It has been regarded as undoubtedly human, though of a very primitive type, characterized chiefly by its exceedingly massive structure and its almost total lack of a chin. The jaw which Professor Freudenberg found is even more chinless than the classic Mauer specimen. Its lower border resembles that of the Java skull.

Professor Freudenberg has been a tireless searcher for human and anthropoid remains in the region around Heidelberg. Recently he found a portion of a broken and water-worn arm-bone which he attributes to a fossil gibbon.—*Science*.

OCEANIA

A new anthropological journal has made its advent. It is OCEANIA, a journal devoted to the study of the native peoples of Australia, New Guinea, and the islands of the Pacific Ocean. It is published for the Australian National Research Council by Macmillan and Company Limited, Melbourne. Volume 1, number 1, dated April, 1930, sells for seven shillings and sixpence. The editor is Professor A. R. Radcliffe-Brown, University of Sydney.

A wonderfully lucid description of The Social Organization of Australian Tribes by Dr. Radcliffe-Brown is the outstanding article. Three other articles are Some Aspects of Warfare in Melanesia, A Dart Match in Tikopia, and The Wik-Munkan Tribe of Cape York Peninsula. In addition to articles there are sections for Reports and Proceedings, Notes and News, Reviews of Books, and Bibliographical Notices.

The excellent character of the first issue of the journal commends it for support, which the editor states must come from subscriptions and contributions if the venture is to be a success. Communications relating to subscriptions or advertisements should be sent to the publishers.

* * * * *

TWO FRAGMENTARY HUMAN SKULLS, together with bones of two skeletons of prehistoric man, have been unearthed in Algeria by the Beloit College-Logan Museum expedition under Dr. Alonzo Pond. Thirteen student workers and 16 Arabs have started excavations at a site 12 kilometers north of Ain Beida and east of Berriche. Lauriston Sharp and John Gillen, both University of Wisconsin students, have come upon parts of an adult skeleton and the bones of a child about six years of age. The bones were found in an undisturbed section of a shell heap, which gives evidence that the individuals were as old as the deposit in which they were found. Numerous flints and some animal remains have been uncovered. Robert Kreiger, a Beloit student, found a human radius which had been used as a flaking tool.

DR. FAY-COOPER COLE, chairman of the department of anthropology at the University of Chicago, has received the gold medal of the Chicago Geographic Society for his anthropological researches. The presentation speech was made by Dr. James Henry Breasted, director of the university's Oriental Institute, who received the same honor in 1929 for research in Egypt and the Near East. Dr. Cole's ethnological investigations have taken him into the Philippines, the Malay peninsula, Sumatra, Java, and Borneo.

THE LONDON TIMES reports that on the eve of the departure of Professor Nicholas Roerich, the Russian painter and archaeologist, for Central Asia it was announced that there had been founded a Himalayan Research Institute, or Roerich Museum, with headquarters in the Kulu valley, Western Himalaya. The institute, which will cooperate with the American Archeological Institute, is an outgrowth of five years' work in Central Asia of the expedition led by Professor Roerich. Among its honorary advisers are Dr. Ralph V. D. Magoffin, president of the Archeological Institute, Mr. Roy Chapman Andrews, Professors R. A. Millikan, Albert A. Michelson, and Alexander Klemin, Professor Jacques Bacot, of Paris, Sir Jagadis Bose, Dr. Sven Hedin, Professor Albert Einstein, and Professor A. Geoffré de la Pradelle.—*Science.*

IT IS ANNOUNCED at the Smithsonian Institution that John P. Harrington, of the Bureau of Ethnology, returned to Washington on April 26, after eleven months of field study among the Karuk and San Juan Indians of California, and that Dr. J. W. Gidley, of the U. S. National Museum, left Washington on May 1 to continue work begun in Idaho last summer in the Snake River valley.—*Science.*

FATHER BERARD HAILE, Franciscan monk and for twenty years missionary among the Navaho Indians of Arizona, has joined the scientific staff of the University of Chicago as research associate in anthropology. He spent this summer tenting among the Apaches of New Mexico, equipped with a phonograph for recording their language and music.—*Science.*

THE FIRST MEETING of the American Association of Physical Anthropologists was held from April 17 to 19, at the University of Virginia, Charlottesville, coincidentally with the meeting held by the American Association of Anatomists. The program was devoted to subjects of mutual interest to the two societies.—*Science.*

MR. M. W. STIRLING, chief of the Bureau of American Ethnology, has returned to Washington from Florida, where he excavated a large shell mound and a sand burial mound near Safety Harbor. A large amount of skeletal material was obtained, as well as a good collection of objects representative of the culture of the period.—*Science.*

DR. HENRY CHAPMAN MERCER, anthropologist, archaeologist, historian, and founder of the Mercer Museum at Doylestown, Pennsylvania, connected with the Bucks County Historical Society, died on March 9 at the age of seventy-four years. —*Science.*

THE RIVERS MEMORIAL MEDAL for 1929 has been awarded by the council of the Royal Anthropological Institute to Mr. J. H. Hutton, of the Indian Civil Service, for his services to anthropology in the field in Assam.—*Science.*

THE AMERICAN MUSEUM of Natural History receives $557,361 under the will of Frederick G. Voss. The bequest is to be used in the further development of research in anthropology and archaeology.—*Science.*

DR. THOMAS R. GARTH, professor of educational psychology in the University of Denver, is conducting researches on the color blindness of Indians, starting at Santa Fé, New Mexico.—*Science.*

PROFESSOR G. ELLIOT SMITH gave a lecture on "The Human Brain" at the Royal Society of Arts, London, on March 12.—*Science.*

ON MARCH 29, Dr. Edgar L. Hewett, of Santa Fé, New Mexico, lectured at Chapelle House, Denver, Colorado, on the Indians of the Southwest, with special reference to the ruins of ancient pueblos.—*Science.*

LISTED BELOW are grants-in-aid for anthropological projects made by the Social Science Research Council during 1929–1930. The next distribution of grants-in-aid will be made in March, 1931. Applications will be received up to February 1st of that year by Walter R. Sharp, Secretary, Committee on Grants-in-Aid, at the Council's New York City office, 230 Park Avenue.

Herman Beyer (Tulane University) to aid in the completion of his study of the Maya Codex in Dresden, Germany, and the writing of an extensive commentary on the document.

Alfred Irving Hallowell (University of Pennsylvania) to aid in the completion of his study entitled "The Interrelationship between the Kinship Terms and the Social Organization of Cree Speaking Bands in the Environs of Lake Winnipeg (Manitoba, Canada), especially with reference to the influence of native marriage customs upon linguistic usage."

Daniel Sutherland Davidson (University of Pennsylvania). Research Associate in Anthropology. Project: "A Comparative and Distributional Study of Australian Material Culture in the Museums and Private Collections in Australia." Study in Australia.

BULLETIN No. 6 of the American School of Prehistoric Research, edited by the Director of the School, Professor George Grant MacCurdy, contains an article by Miss Dorothy A. E. Garrod on "The Paleolithic of Southern Kurdistan." Miss Garrod was in charge of the School's Joint Expedition with the British Percy Sladen Fund.

NEIL M. JUDD, curator of American archaeology in the U. S. National Museum, returned to Washington on February 13 from an aerial survey of the prehistoric canals in the Gila and Salt River valleys, Arizona. Mr. Judd was sent as a representative of the Smithsonian Institution to cooperate with representatives of the

Army Air Corps assigned to this survey. Mr. Judd estimates that approximately 400 miles of prehistoric main line canals and laterals were formerly utilized in central Arizona, chiefly in the Gila and Salt River valleys. Most of these ancient canals have recently been destroyed owing to the extension of agriculture. The purpose of the survey was to prepare a mosaic map of the two valleys in order that a permanent record might be made of their prehistoric irrigation systems.

THE OHIO ACADEMY OF SCIENCE held its fortieth annual meeting at Ohio State University on Friday and Saturday, April 18 and 19, under the presidency of Dr. F. C. Waite, of Western Reserve University. One interesting feature was an illustrated lecture on "The Mound Builders—the First Ohioans," by Director H. C. Shetrone, followed by a personally conducted tour of the museum.

IN CONNECTION WITH the meeting of the Second Congress of Tourists, the Museum of Peruvian Archaeology, at Lima, has held a special exhibition of Peruvian art in which were shown important discoveries made principally in Paracas, a peninsula in the south of Peru. The site of the excavations is near Pisco.

The most notable of the discoveries were the mummies taken from the tombs of Cerro Colorado. The cadavers are artificially preserved and have apertures at the levels of the aorta and the stomach. They are in a squatting position, surrounded with food and utensils and wrapped up in bundles which stand a meter and a half high. There are cranial deformations and evidences of trephining.

THE SOCIETY FOR PENNSYLVANIA ARCHAEOLOGY, founded on May 6, 1929, for the purpose of organizing the individual archaeologists and private collectors of the state, plans to publish a periodical organ to be sent free to all members. Further information regarding the Society, together with a copy of its constitution, will be sent to all who request it, by the Secretary, Miss Frances Dorrance, 69 South Franklin Street, Wilkes-Barre, Pa.

AT THE MEETING of the American Ethnological Society on Monday, April 28, 1930. Mr. E. W. P. Chinnery presented a paper illustrated by lantern slides on "Twenty Years in New Guinea."

ON OCTOBER 1, 1929, the new Gesellschaft für Völkerkunde was organized as the first German society for the promotion of ethnology, i.e., cultural anthropology, exclusively. By-laws were adopted and Dr. Fritz Krause, the Director of the Museum für Völkerkunde in Leipzig and the leading spirit in the undertaking, was elected President. The initiation fee is three marks; and the same amount is charged annually as membership dues. A quarterly journal was created under the title of *Ethnologische Studien; Zeitschrift fur allgemeine Völkerkunde* (subscription 18 RM for members, plus postage). Payments may be sent to the Society in care of the Dresdner Bank in Leipzig C 1, Goethestrasse. At the meeting there was a discussion of the Tasks and Essence of Ethnology, the speakers being chosen as representatives of diverse theoretical positions.

THE FIFTH ANNUAL meeting of the Catholic Anthropological Conference was held on April 22, 1930, at the Catholic University of America, Washington, D. C. The following papers were presented:

Biren Bonnerjea, "The Hindu Family"; Chi-Lin Chao, "The Chinese Family"; Paul G. Gleis, "The Early Teutonic Family"; Vincent Koppert, "The Nootka Family"; John M. Cooper, "The Origin and Early History of The Family"; James A. Geary, "The Early Celtic Family."

THE FIFTEENTH INTERNATIONAL Congress of Anthropology and Prehistoric Archaeology, constituting the Fourth Session of the International Institute of Anthropology, will be held in Portugal September 21st to 30th. The first five days will be spent at Coimbra, the next three in Porto, and the last two in Lisbon. Dr. Pessoa, general secretary of the session, may be addressed at Coimbra regarding details of the trip to Portugal and stay there. The membership fee is forty francs.

There will be four sections devoted respectively to physical anthropology; human paleontology and prehistoric archaeology; heredity and criminology; and linguistics and cultural anthropology. The International committee includes R. Thurnwald, W. Koppers, Charles Peabody, J. Kleiweg de Zwaan, Sergio Sergi, R. Torii, Professor Poniatowski, Dr. Arne, and E. Pittard.

THE MUSEUM OF the University of Pennsylvania and the Peabody Museum of Cambridge, Mass., sent out their second joint archaeological expedition to Czechoslovakia in June. The expedition was headed by V. J. Fewkes and has a staff of six men representing the two museums equally. The work will be done in cooperation with the State Archaeological Institute, Prague, whose buildings will be used for expedition headquarters. Further excavations will be carried out in three of the sites explored last summer and reconnaissance work will be done in preparation for systematic exploration in the Balkan states next year.

ALAN ROWE, field director of the University of Pennsylvania Museum expedition at Meydum, Egypt, reports the finding of a mummy 4000 years old with its decorations of amulets and jewelry undisturbed. The mummy is of a woman named Sat-Her-em-Hat. The decorations included a pendant of concentric rows of faience cylinder beads and a string of polished amethyst beads. A string of amulets cut in carnelian, jasper, and lapis lazuli was also found.

HERBERT SPENCER DICKEY and Mrs. Dickey left New York about March 20 on an expedition in behalf of the Museum of the American Indian, Heye Foundation, to determine the exact source of the Orinoco river. Dr. Dickey also has some hopes of finding archaeological material. Mrs. Dickey will make a collection of small mammals and birds for the zoological gardens in the Bronx. The expedition includes among its personnel Major De Forest Morton, Robert Durrett, and Briesen Menken.

S. K. LOTHROP, in charge of the Mrs. Thea Heye expedition to Chile, reports the uncovering of thirty burials with much pottery of a type not hitherto known, from

near La Serena. At Taltal Dr. Lothrop obtained bone implements, large knives, and knuckle-dusters.

CLARENCE GRIFFIN, lecturer in the Imperial University of Taipeh, Formosa, for the last three years, invites communication from museums interested in anthropological, zoological, and botanical material from Formosa, particularly material on the skull-collecting tribes which abounds now but is being rapidly dispersed.

THE UNIVERSITY OF PENNSYLVANIA expedition in Egypt, working on the excavation of the huge Mastabah at Meydum, has discovered twelve chambers cut in the rock, mostly stacked to the ceiling with coffins. Nearly thirty mummies have been recovered in fair condition. The best of these was in a double coffin of the new empire.

E. W. P. CHINNERY, Australian government anthropologist, has discovered in New Guinea stone pestles, mortars, and pottery relics of an ancient civilization.

C. LEONARD WOOLLEY, director of the joint expedition of the University of Pennsylvania Museum and the British Museum, reports the finding of the remains of the ancient city wall of Ur, built by King Ur-Engur about 2300 B. C. The wall was about twenty-six feet high and from seventy to ninety feet wide at the base.

THE FREDERICK H. RAWSON-FIELD MUSEUM Ethnological Expedition to Angola and Nigeria, West Africa, under the leadership of W.D. Hambly, has completed its work and is back in Chicago. The expedition brought back extensive collections, still and motion pictures, dictaphone records of native languages, and scientific data. The expedition traveled more than 10,000 miles in making its collection.

AN EXPEDITION, headed by Captain Robert R. Bennett, has been sent out by the Museum of the American Indian, Heye Foundation, to explore the ruins of the Mayan city of Coba, Yucatan, and a stone road presumed to run from Coba to Chichen Itza.

A BRITISH EXPEDITION has set out from Belize, Honduras, to search for Mayan temples in Guatemala and British Honduras.

HARRY L. SHAPIRO has returned to New York from an expedition to the Marquesas and Society Islands and the Tuamotus on behalf of the American Museum of Natural History. Dr. Shapiro made a racial survey to determine if possible the origin of the Polynesian races, and brought back a collection of ethnological material for study.

MISS ELIZABETH STEEN, University of California, is making a journey into unexplored country in the State of Matto Grosso, to search for Indians of the "Tapirape" tribe which has not heretofore been visited by white men. Miss Steen will travel attended only by an Indian guide and a negro maid.

FRANS BLOM, leader of Tulane University's expedition to Yucatan, has discovered monuments with hieroglyphs that extend the history of Uxmal 500 years further into the past.

JOSEPH MARQUART, curator of the Ethnographical Museum, Leyden, from 1902 to 1912, died February 4, at the age of 66 years.

AN EXPEDITION sent by Harvard University and the Catholic University of America has discovered fourteen Sinaitic inscriptions on stone dating from 2000 B. C., near Serabit-el-Khaden in the Sinai desert. This discovery doubles the total of documents known in this script.—*The Museum News.*

DR. HENRY W. HENSHAW, first editor of the American Anthropologist, 1888–1893, died at Washington on August 1 at the age of eighty years.

DR. PAUL H. STEVENSON, of Peking Union Medical College, gave two courses at the University of California during summer session, one on Origin and Antiquity of Man, and the other on Race Problems.